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ENGINEERING

# Advanced Management

DECEMBER 1961



# Advanced Management



*Progress Through Enlightened Management*

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# *The Wider World of Scientific Management*

A  
M  
*Editorial*

A scientific management journal has a responsibility in this particular time in history. It has a responsibility to inform and widen discussion on the vital issues affecting professional managers. These issues have undergone considerable change in the past half century, since the scientific management movement evolved. The coming year, 1962, marks fifty years since a group of scientific management leaders organized the first scientific management society. Interested professionals in the field have organized and subsequently united to provide more strength and scope to their special interests.

The merger of NOMA's OFFICE EXECUTIVE and SAM's ADVANCED MANAGEMENT next month is further reflection of this dynamic process of growth and change in scientific management as indeed in life itself. It is our hope that the new publication will serve the many needs of this larger readership. But more than this, it is hoped we may provoke deeper examination and genuine challenge to all who share these pages. These are not times for scientific journals to cease their critical examination of the world within which they operate. Other media may serve this tranquilizing role of contentment and self-sufficiency. But scientific management has broken through into a new responsibility of national and international leadership. Man's exploration of space is the present frontier of scientific management. And even World War or peace is the current responsibility of scientific managers. A journal that reflects the sentiments of a segment of this leadership cannot accept its task lightly and capriciously.

The charter for this task was formalized by a joint committee of SAM and NOMA.

"A management publication emerging as a result of the incorporation of the resources of the existing "ADVANCED MANAGEMENT" of SAM and the "OFFICE EXECUTIVE" of NOMA should set as its goal the providing of a common denominator for the diverse readership and membership of SAM and NOMA. It should help this readership by making available new and effective techniques for solving common management problems. And, it should provide a stimulus and challenge to this readership by being attuned to the changing dynamism of management . . . The magazine should not be straight-jacketed into a rigid format or policy, but grow and develop in response to both the critical needs of its readers and the changing times . . . Today there appears to be no effective national management publication that provides a stimulating market place for the management thinkers and doers to gather and exchange ideas. If this magazine directs its short-range plan to this immediate objective, it should meet its first level of growth."

Fortunately, the professional members of "OFFICE EXECUTIVE" will be staffing the new publication. Dickson Ash will serve as Managing Editor, Al Spangler as Director of Advertising and Spencer Everhardt as Business Manager. Misses Murray and Metzger of the NOMA staff will also be assisting in the new publication.

With such a formidable staff and the help and support of our members and readers we should have no difficulty in reaching the objectives that have been established.

HENRY A. SINGER  
*Editor*

RECENT MANAGEMENT developments have tended to quantify the manager's role. More and more numbers are creeping into his daily work. To handle effectively the volume and complexity of these numbers, the manager is forced to broaden his range of professional skills to include the tools of operations research and mathematical analysis. Modern data processing techniques are forcing the development of a mathematical language for business.

The range of skill required of today's corporate manager is already quite wide. In *The Institute of Management Sciences Information Pamphlet*, for example, the qualifications of a manager are described as:

The modern manager must be interested in scientific analysis of important areas of management made possible by recent advances in the physical, biological, and social sciences, and in mathematics and statistics. He must be interested in the evaluation of new management methods such as statistical decision theory, the theory of games, linear programming, and economics and psychology as they deal with problems of

# The Engineer as a Corporate Manager

AN ANALYSIS OF HIS NEEDS AND QUALIFICATIONS

production scheduling inventory control, plant location and layout, investments and financial analysis. He must be interested in the methods of probability analysis as a means of approaching problems in maintenance, accident prevention, bonus and salary systems, traffic flow and congestion.

Or as Robert L. Katz has said:

The manager needs three basic skills. One is *technical skill*, which implies an understanding of and proficiency in a specific kind of activity, particularly one involving methods, processes, procedures, or techniques. Another is *human skill*, which means the executive's ability to work effectively as a group member and to build co-operative effort within the team he leads. And the third one is *conceptual skill*, which involves the ability to see the enterprise as a whole. It includes recognizing how the various functions of the organization depend on one another and how changes in one part affect all the others; and it extends to visualizing the relationship of the individual business to the industry, the community, and the political, social, and economic forces of the nation as a whole.<sup>1</sup>

According to Neil H. Jacoby:

The executive is a leader of people, and he needs to apply the principles of psychology and sociology in eliciting effort from people and managing personnel. The executive is a manipulator of machines, methods, and products in a world of rapid technological change, and he needs some background information in natural science and industrial engineering. The executive is constantly contracting for the acquisition or sale of capital funds, equipment, materials, and services and he needs to know the basic elements of law. He is continuously required to interpret masses of figures regarding the physical output or financial results of business operations, so that he needs to be a "shirt-sleeve" statistician. With the recent development of "operations analysis" and high-speed electronic computers as aids to executive decision, it will greatly help the executive to have training in mathematics. Finally, the executive helps to guide the enterprise through time, and he needs the perspective that the study of history provides.<sup>2</sup>

by JOHN E. BURNS

and

KARL W. ZINK

ADVANCED MANAGEMENT



An important corollary of the growth of great corporate enterprises operating on a nationwide basis has been the formulation of exceedingly exact requirements which largely govern the selection of new professional managers. For example, Lewis H. Brown believes that the far-sighted major business executive of today must possess qualifications like these:

He must plan ahead with the vision of the engineer. In estimating prospective income and expenditure he must be as accurate as the mathematician. He must have a knowledge of finance and law approaching that of the banker and the attorney. Like the research student in the laboratory, he must be keenly receptive to advances in technical knowledge. In directing the staff, he must have the qualifications of the teacher, plus the psychologists's insight into human activity. If the business executive is to anticipate the ups and downs of the business cycle and make his decisions accordingly, he must also find time to keep abreast of the literature of this new profession, which is already as voluminous as that of law, or medicine, architecture, or engineering.

Neil W. Chamberlain, commenting on these qualifications for the modern corporate manager, says:

These are exacting standards but if anything, they constitute an understatement of the professional competence which the professional management of our top corporations must bring to their jobs. The governance of a sensitive producing and distributing society of up to several hundred thousand populations, engaged in specialized tasks requiring a high degree of technical and social coordination, working with specialized tools and equipment valued at up to two thousand million dollars, and integrated into a larger society in such a manner that shocks from without are registered within and changes within have their repercussions on the outside — the governance of such an industrial state requires a professional skill second to none.<sup>3</sup>

All these statements on qualifications show a growing need for men with a high level of analytical ability and a sophisticated command of analytical research tools. Sound training in the physical and social sciences and in mathematics and statistics, combined with the ability to apply these tools to business problems has become more important than a detailed knowledge of current practices or the acquisition of routine skills.

#### Kinds of Knowledge That Contribute

Business places greater emphasis on the kinds of knowledge that contribute to analytic capacity, to breadth and flexibility of mind, and to the ability to cope with a technological, social, economic, and political environment that changes with bewildering rapidity.

William B. Given, Jr., feels there is a trend toward the movement of engineers into management positions in the manufacturing field. He states, "In our top 25 positions (American Brake Shoe Co.) there are now 15 men who are graduate engineers — well over half — and another 6 who have had engineering training. The same trend is going on in countless other manufacturing companies."<sup>4</sup> However, he does warn that engineers underestimate the importance of intangibles such as attitudes, emotions, customers, traditions, and prejudices.

In the specific knowledge area the engineer can contrib-

ute greatly to the role of the corporate manager. But, it may be argued, is not the engineer's training too specialized for the broad range of demands placed upon the modern manager? Is it necessary for a manager to have the depth of technical skill required of an engineer? Can not the manager rely upon a staff of technicians, keeping his own duties in the realm of coordinating his staff and designating the work to be accomplished?

#### Understands the Processes and Problems

An engineering graduate is familiar with the problems of mathematical analysis. Much of his education deals with the application of mathematics to physical situations. The principles and problems involved in applying the recent mathematically oriented management techniques are somewhat similar. The engineer understands the manufacturing processes and operating problems connected with the enterprise. It is an invaluable asset to be able to appreciate and anticipate the technical and operating difficulties that are likely to occur.

Tomorrow's modern manager must have the ability to grasp the suitability and meaning of the new mathematical operations research and management science techniques. Even if he cannot apply these techniques in detail himself, he must be able to deal with specialists in these areas from his own staff or from outside consulting firms. This requirement cannot be met as easily as may seem at first glance. These fields have a unique technical vocabulary which can raise communications barriers. The techniques are also sufficiently different from those of traditional mathematics to cause difficulty in communicating via mathematical symbols. National conventions are still being standardized in some of the newer techniques.

Since the engineer is concerned with the design, improvement, and installation of systems involving men, materials, and equipment, he must and does have fundamental training in mathematics, physics, chemistry, and in the engineering sciences. The problems connected with the human component of the system require a knowledge of the behavior, motivation, capabilities, and limitations of people.

Knowledge derived from training in the social sciences, such as psychology and sociology, is necessary to predict and describe the variations necessary in the performance of men, equipment, and processes, and the environmental processes affecting them. The engineering schools give a sprinkling of this "social knowledge."

The engineer makes extensive use of probability and mathematical statistics. A wide variety of special mathematical tools and techniques are used in the analysis and design of complex integrated systems. Many of these mathematical tools have broader uses, and the modern manager is beginning to use them. Among these are methods of linear and dynamic programming, gaming theory, digital and analog simulation techniques, control theory, computer applications, and many others associated with recent developments, as well as more familiar tools.

The engineer's suitability for the role of corporate man-

ager can also be supported in another way: Engineering is the background of most professional personnel in operations research departments. In fact 30% of this group have this background. Mathematics and statistics follow with 20% of the personnel.

Previous work experience is also concentrated in the engineering, mathematics and statistics area. Companies place emphasis on an engineering education because the work requires a good grasp of mathematics and statistics, as well as the scientific method of analysis.<sup>5</sup>

When G. E. Morse, Vice President of Minneapolis-Honeywell Regulator Co., spoke at an engineering conference in Chicago in 1960 he said that many thoughtful people argue that the president, or even the board chairman, of a company that has a highly technical product should be a top-flight engineer as well as a top-flight administrator.

Others argue that such jobs are and should be filled by a top-flight administrator without regard to whether he is a top-flight engineer or scientist. But one area in which there is no disagreement is that in the years ahead the engineering-management job will be characterized more and more by its complexity.

The engineer, as perhaps no other professional except the physician, is torn between an engineering and an administrative role. But, be that as it may, the engineer-manager should be chosen and evaluated on the basis of his primary task — dynamic management leadership — and secondarily on the basis of his technical competence.<sup>6</sup>

#### Headed by a Graduate Mechanical Engineer

The world's largest corporation, American Telephone and Telegraph Co. (with 730,000 employees, assets of \$27.81 billion, and net profits of \$1.2 billion) is headed by Frederick R. Kappel, a graduate mechanical engineer. Basic research has always been the most prominent attribute of the Bell System, and its world renowned Bell Telephone Laboratories its hallmark under Kappel's imaginative planning for world wide satellite communication.

Thomas Hallowell, Jr., is President of Standard Pressed Steel Co., a popular medium-sized business. Hallowell is

a graduate engineer, and the company is eminently successful.

Flick-Reedy Corp., a small business with 350 employees, but the largest manufacturer of fluid power cylinders in the United States, was founded and is headed by Frank Flick, a graduate mechanical engineer. New developments and innovation in technical and human factors, as well as building construction and plant layout, are the outstanding characteristics Flick has contributed.

#### Usually Slow When Making Decisions

The customary training of engineers is said to make these men so self-satisfied with the invincibility of the scientific method they overlook the fact that successful management must work through people. Further, Given points out that engineers are usually slow when making decisions. They weigh the pros and cons innumerable times and often require a too-thorough analysis of a problem be made.<sup>7</sup>

There is no doubt that the ability to communicate ideas is one of the key qualities which corporations demand in their managers. The engineer, however, is often short on semantic ability.

Modern management is encountering many semantic problems in communicating among specialists in different disciplines. Scientific communication by standardized symbols is difficult in management situations. Unfortunately, engineering schools sometimes do not place the same urgent emphasis on the ability to communicate that modern corporations do. As a result some graduates are relatively deficient in this requirement.

Peter Drucker has said that the ability to express ideas in writing and in speaking heads the list for success:

As soon as you move one step up from the bottom, your effectiveness depends on your ability to reach others through the spoken or written word. And the further away your job is from manual work, the larger the organization of which you are an employee, the more important it will be that you know how to convey your thoughts in writing or speaking. In the very large organizations, whether it is the government, the large business corporation, or the Army, this ability to express oneself is perhaps the most important of all the skills a man can possess.<sup>8</sup>

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KARL W. ZINK is a member of the faculty in the Department of Management, at De Paul Univ., Chicago, where he received his B.S. degree in business administration. He obtained a M.B.A. degree from the Univ. of Chicago. Prior to joining the faculty at De Paul, he served as Data Processing Supervisor for the Public Health Service and for several commercial enterprises. He is a member of the Institute of Management and of the Industrial Management Society.

It is generally recognized today that the top executive jobs are concerned with creative ideas and human relations and that they require depth and breadth of judgment and understanding, not narrow specialization. In discussing education for business, Clarence Randall, retired President and Chairman of the Board of Inland Steel Co., says:

The weakness of technical education as a preparation for a business career . . . when it is not balanced by participation in liberal disciplines, is that it leaves in the mind of the student the impression that all problems are quantitative and that a solution will appear as soon as all the facts have been collected and the correct mathematical formula evolved.

Would life were that simple! Unhappily, the mysteries of human behavior from which comes our most complex problems do not lend themselves to quantitative analysis, and there is no mental slide-rule which can be distributed as a substitute for straight thinking.<sup>9</sup>

Many other qualities required of the modern corporate manager, such as versatility, ability to think, persistence, etc., seem to be more a function of the individual graduate than the type of education he has received. A certain minimum amount of ability is required to become a college graduate irrespective of the type and caliber of college attended.

Many corporations specify college graduates for certain positions to assure themselves of obtaining men with at least a minimum amount of ability. Modern management positions require far more than the minimum, and very often this additional amount must be assessed and acquired by the graduate on his own.

George S. Odiorne, Director of the Bureau of Industrial Relations, Univ. of Michigan, has proposed that three years in a liberal arts college plus two years in an engineering school would be a desirable education for engineers. In the liberal arts phase he would get mathematics and physical sciences plus arts, humanities and social sciences; in engineering school he would get advanced technical study.

Odiorne points out that "this will provide society with the engineer who 'understands' how to work in the climate of uncertainty and will eliminate the 'skilled barbarian'—the specialist tightly fitted into his own slot and serenely indifferent to the unscientific turmoil in which the rest of us live."<sup>10</sup>

#### Preparation for a Management Career

Stanley F. Teele, Dean of Graduate School of Business Administration at Harvard Univ., says that the best preparation for a management career is an undergraduate concentration on liberal arts or engineering, followed by two or three years of employment in business to provide experience and then a program of graduate instruction at any good school of business administration.<sup>11</sup>

An engineering degree coupled with a master's degree from a good business school would form a fairly useful educational background. This combination would have strong representation of applied scientific principles and also have the depth of commercial background needed by a corporate manager.

An introduction to the literature in the field of management is an important benefit of a master's program in business schools, and statistics show that a substantial number of men in the graduate schools of business, particularly in evening programs, are engineers. Also, professional business societies give the manager an insight into the way in which newer developments are being integrated into the field of management.

Having inherited a giant machine that others have built, the modern manager's job is to keep it running smoothly and growing smoothly. The head of a giant corporation today is quite the antithesis of the order-barking, sweeping decision-maker of yesteryear. He is more aptly described as the man who keeps the machinery oiled, makes sure its working parts are kept going at top efficiency, and that the machine itself is completely up-to-date. The modern manager's function is best described as "not to pioneer, but to mesh."<sup>12</sup>

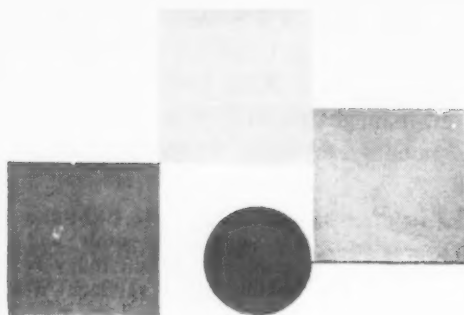
#### Basic Requirement of Executive Capacity

Crawford H. Greenewalt, President of Du Pont, states, "the basic requirement of executive capacity is the ability to create a harmonious whole out of what the academic world calls dissimilar discipline."<sup>13</sup>

An extensive knowledge of general economic activity and the specific industry activity is needed for meshing and pioneering, but meshing requires more personal qualities than pioneering. Where pioneering requires a self-reliant, rugged individualist, meshing requires additional personal qualities to be able to guide the work of other people and secure results amicably through these people. The typical engineering graduate has a fine background to develop a modern manager's requisite knowledge. If he has the capacity to develop the broader outlook which is essential, as well as the requisite personal qualities, he can become an excellent modern corporate manager.

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**The increasing tempo of technological advance calls for a reappraisal of the relationships between the purists and the practitioners.**

# *Scientists and Industrial Production*

**by W. V. OWEN**

**T**ECHNOLOGICAL, scientific, and political explosions of the past 20 years or more have created new managerial problems and have called attention to many old ones. Among these problems is the need to harmonize and relate the thinking and activities of the practitioner (the maker of things) with those of the purist.

This problem is often expressed as practice versus theory, or applied science versus science. The issue is probably one of relatives rather than absolutes. One suspects that there is some theory in all practice and some practice in all theory.

A few obvious examples of the issue are found in the relations between production and research, between the business executive and the theoretical economist, between engineering and pure science, between actual administration and organizational theory, between first-line supervision and behavioral science, and between model-builders and institutionalists.

At a recent management forum of production staff and line personnel, the comments on research and development (R and D) were to the effect that:

1. R and D should be more directly related to sales.
2. R and D projects should be completed faster and tied more closely to marketing and manufacturing and to economics.
3. Better measures of productivity and utilization of scientific personnel should be developed.

The production management group was also concerned with how much, if any, of the costs of R and D should be absorbed by the production function. Another question

had to do with the participation of R and D personnel in policy-making.

In a sense, the traditional white collar versus the blue collar relationship has been paralleled in the "thinkers" and the "doers." Here the demarcation is not based upon the color of the collar but on the possession of academic degrees. Current expressions such as eggheads, cloud nine, and hardware boys suggest the strongly different attitudes and interests in the two categories — scientists and non-scientists.

To see the scope of the problem, the relative significance of relationships, and the validity of general statements, note the data given below. (With the revolutionary changes in technology and research methodology, and the new knowledge of the electronic and atomic age, there are many difficulties of definition caused partially by one discipline shading into another.)

Of the 728,400 scientists and engineers in all activities, 223,800 or 30.6 per cent are engaged in research and development. Engineers outnumber scientists slightly more than five to two. The exact numbers are 521,000 engineers to 207,000 scientists.

Among physicists, 58 $\frac{7}{10}$  per cent are engaged in research and development, the highest proportion of any of the disciplines working in R and D. Biologists, with 56.2 per cent, rank second. Only 6.5 per cent of the earth's scientists are reported as doing research and development work. Of the 222,800 scientists and engineers in R and D, 9,500, or 4.3 per cent, are doing basic research.<sup>1</sup>

The employment of 728,400 scientists and engineers in manufacturing and other industries represents an increase of 28 per cent from 1954 to 1957.<sup>2</sup> As the number of scientists and engineers has increased, so have the dollar expenditures, but at a considerably greater rate. Expenditures for research and development performed by private



industry rose from \$3.6 billion in 1953 to \$8.2 billion in 1958.<sup>3</sup> Of the \$8.3 billion allocated to R and D in 1958, \$5 billion was spent for applied rather than basic research.<sup>4</sup>

Apparently the importance of theoretical research is not to be measured by the relative number of persons employed in basic research and/or the relative dollar expenditures for pure research as compared with the number of persons and/or the dollars spent in applied development.

Most spectacular increases in the disciplines from 1954 to 1957 were in physics, life science, and mathematics. Increase in mathematicians was 88.1 per cent; life science personnel, 59.6 per cent; and physicists, 57.2 per cent.<sup>5</sup> An increase of 65.3 per cent among administrators represents an increase of more than twice the increase for both engineers and scientists over the same period.<sup>6</sup>

The approximate distribution of scientific manpower — according to employing institutions as determined from data collected over a three-year period from 1956-1958 — shows private industry and self-employed, 48.8 per cent; educational institutions, 28.5 per cent; federal government, 14.0 per cent; state, local, and other government, 5.3 per cent; and nonprofit organizations 3.92 per cent.<sup>7</sup>

Making allowances for the ambiguities and inaccuracies inherent in our data, it seems reasonable to conclude:

1. The number of persons involved (728,400) presents a personnel problem of considerable proportions.
2. The marked increases in the number of persons and the dollar expenditures in a relatively short period of time suggests the "crash nature" of the problem.
3. The purists are far outnumbered by the applied personnel.
4. The relatively small cost of basic research as contrasted with production is quite apparent.
5. The private industry segment of society has by far the greatest share (about 50 per cent) of the responsibility for administering the affairs of this new era of pure and applied science.

Historically the scientist worked in *his* laboratory. His professional communication relationships were primarily through other *individual* scientists, through the journals, and through professional meetings. New knowledge was credited to the individual. Theories or validation of theories were identified by the discoverer's name.

#### **By Force, He Is No Longer a 'Man Apart'**

Eric Johnston says some 90 per cent of all the scientists who ever lived are living today and the total accumulation of scientific knowledge is doubling every ten years.<sup>8</sup> Today, as contrasted with the past, scientists tend to work in groups of from several persons to several hundred. We speak of team research. The scientist is confronted with many of the same problems as other employees of large organizations. By force he is no longer a "*man apart*." Now he is a *part* of a much larger organization.

The pure scientist may be distinguished from the applied scientist in that the purist is led by his science wherever science leads. In contrast, the applied scientist is con-

cerned with creating a product that has a fairly distinct blue print. The pure scientist is motivated little, if at all, at the prospect of his discoveries resulting in landing a man on the moon. But the applied scientist *is* motivated by the possibility of landing a man on the moon.

Purists tend to regard themselves as specialists with a more or less narrow body of thought, called a discipline, to act as a guide and to furnish a cloak of prestige. The applied scientist, on the other hand, is called upon to perform a great variety of tasks.

We should prefer not to think of the destructive uses of scientific discoveries, but the responsibility for these uses would seem to be that of all mankind. The most futile of all efforts is for any one group to shift the responsibility for wrong uses to any other group or groups. If civilization is destroyed, no one will be around to assess the blame.

#### **May Try to Shift Responsibility for Failure**

The cleavage between theorists and non-theorists may be partially explained in terms of liability and credit. If a project is successful, the production segment may claim credit for its success because of production efficiency, while the theorists may take credit because of excellent design. Or, in case of failure, the researchers may try to shift responsibility for failure to faulty production, and the producers may, in turn, countercharge "poor design."

In a few short years the academic, industrial, and commercial worlds have joined in a common effort of problem-solving. They are working on internal problems such as maintaining or improving per capita real income and on the external problem of the defense and expansion of free institutions. Apparently isolation of interests or operations is of only historical interest. The "ONE WORLD" of the late Mr. Wendell L. Willkie is now a reality. However, the suddenness of the change from degrees of isolation to a world of close and inescapable relationships finds us with little preparation.

Are there any basic differences in the social, psychological, and economic needs of the purist as contrasted with those of the applied scientist? The scientist as a person has not been studied as has the shop worker or even the consumer. What, for example, are the attitudes of scientists toward other scientists and administrators or toward the industrial system and the production function? Does production support research, or does research support production? Should one look for a solution in the direction of organizational changes, in economics (salaries), or psychological study?

Many other questions could be asked, but the information vacuum on the relationships of scientific personnel to other groups and to organization is evident.

Assuming a problem of coordinating the functions of research with other functions does exist, what kind of problem is it? Exploration of this question may suggest how the problem might be treated. We cannot, of course, expect sudden and radical revelations. Nor can we expect scientists or non-scientists, in the short run, to become different kinds of people. Scientists and producers, what-

ever else they may be, will continue for some time to be scientists and producers respectively.

Since relationships among people are involved, one cannot ignore communications. If the scientist uses symbols not understood by the production personnel, and if the shop language is not understood by the researcher, communication breakdowns are inevitable. Is it possible, then, for the scientist to learn the language of the shop or for the shop worker to learn the language of scientists? And if possible, would the costs of time be prohibitive?

The art of associating two or more groups of persons with different orientations may need to be developed. Joint seminars, for example, have been suggested. It might be profitable, however, for the industrial psychologists to measure the impact of seminars to find out if such meetings might cause each group to retreat to its respective cocoon, more convinced than ever of its self-superiority and of the inferiority of the opposite group.

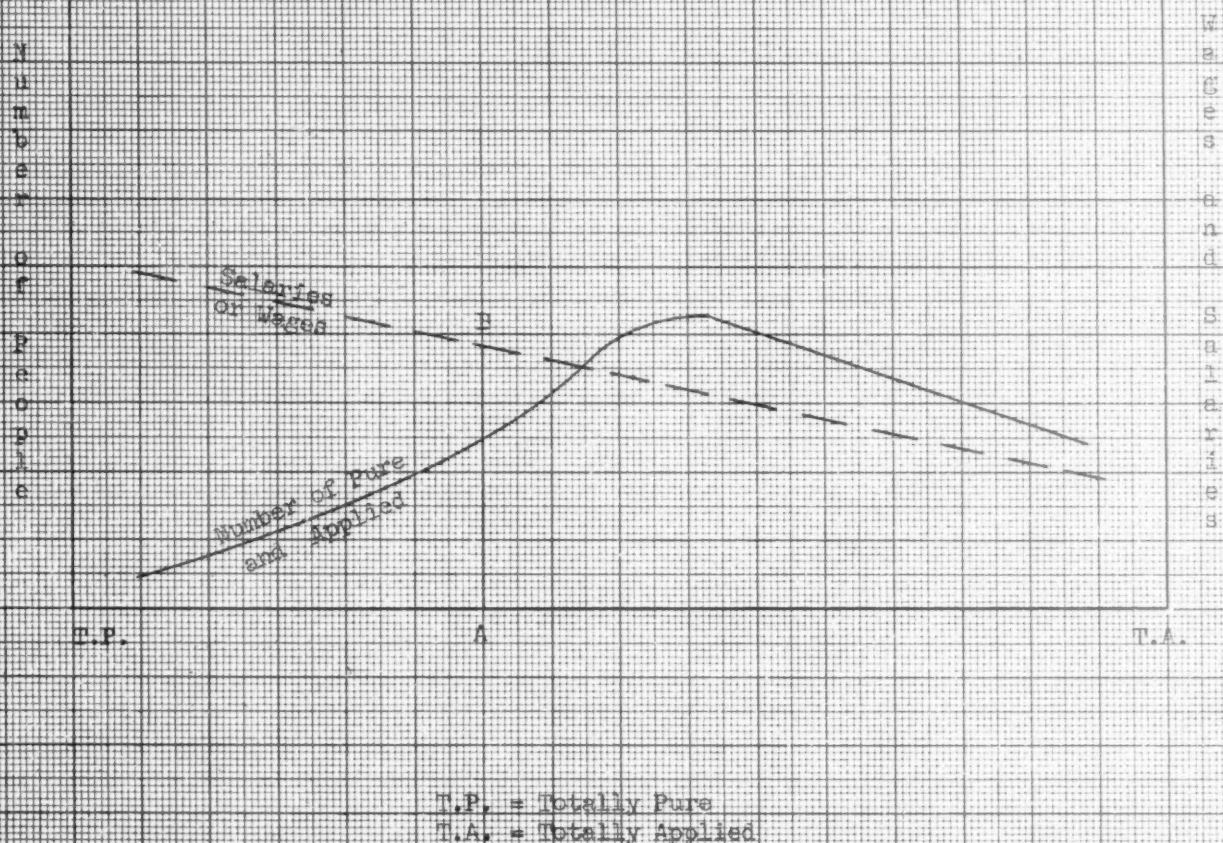
If top management fully supports "cross communications," the separation of research and production might

be less than several hundred or more miles as is sometimes the case. On the other hand, in at least one instance, and probably in many more, management has assembled the researchers, technicians, and others to discuss research projects. Meetings of this kind have helped to promote better understanding of the related aspects of theory and practice.

The functioning of economic factors in our problem is evident. But an analysis of salaries, or wages, paid to scientists and non-scientists is complicated, for wages and salaries function as costs, income, and motivation and as a status-determinate. We must also be aware of the importance of relative salaries as well as absolute dollar figures. A reduction in the salary of a researcher might make an employee in the production department as happy as he would be if he, and not the researcher, were the one to receive an increase.

In the final analysis, administration cannot duck the responsibility of value-determination. Salaries are price tags put on human resources. To rely solely on the mar-

# SALARIES AND WAGES AS RELATED TO OCCUPATIONS--TOTALLY PURE TO TOTALLY APPLIED





ket to determine remuneration is to ignore part of the problem. Employees talk about salaries, and especially about salaries of personnel coming into an organization for the first time. Unlike bushels of wheat which, though in the same elevator, are unconcerned about the price of wheat, employees in the same company are concerned about remuneration.

Since salary changes are so intimately related to status and promotions and since it is difficult, if not impossible, to isolate the salary of one person from the salaries of other related persons, the significance of the remuneration structure for scientists and for others cannot be stressed too much. The morale and efficiency of workers and the long-run success of the research-production operation is intimately tied to salaries.

The relationships between salaries and occupational functions in a hypothetical situation is given in the chart.

By plotting salaries against the number of persons who are classified as pure research and the varying mixes of pure science and application along a continuum from totally pure to totally applied (if there are any who fall at the extremes), a company would have an economic-occupational picture for salary structure and salary policy determination.

Note in the chart that relatively few purists are being paid slightly higher salaries than are the generalists (50 pure — 50 applied mix) and that the scientists (purists), compared with the totally applied (technicians), are being paid at the ratio of five to two.

From the chart, one can calculate the salary cost and the number of technologists being used to support the pure scientists by drawing a vertical line (say AB) between support personnel and research scientists. The salaries and the sum of individual persons to the left of line AB represent research; the salaries and sum of individuals to the right of AB represent support. Or, if one thinks of research as supporting production, the number of persons and salary costs used to support production can be calculated from the chart by reversing the "right of line AB" with the "left of line AB."

### Power Centers, Status, and Prestige

The ease of tinkering with organization tempts one to make organizational changes. But such changes are sensitive and delicate aspects of industrial administration. Changes in titles and levels rearrange power centers and shift status and prestige relationships. All these values among human beings can be changed suddenly by drawing a few straight lines and erasing other straight ones. A research director who has been reporting to the plant manager becomes an entirely different "organizational person" when he begins to report to the president of the corporation.

To explore the facets of organization as related to the administration of modern, research-minded, industrial society would lead us far beyond the bounds of this exposition. This is not to say nor to imply that research in organization would not bear fruit. Contrariwise, there is a



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critical need to investigate the relation between the mechanics of organization and the coordination of theory and practice.

The problem of coordinating the function of research with the function of production is a phase of the more general problem faced by all societies. This is the problem of maintaining a reasonable semblance of unity among conflicting interests.

Divide and conquer is an age-old procedure of revolutionaries. To reap the benefits of competition between conflicting interests, and at the same time develop sufficient harmony to make functional integration possible, is the principal job of management. A society that fails to keep competition alive will perish from monopolistic lethargy. A society that fails to maintain reasonable unity among the conflicting interests will find itself broken into bits that all the glue in the world will not fasten together.

It can be argued that the social war among conflicting interests is a continuing war. Objective of the war is to determine the elite leadership that goes to the strong.

This pattern of thought can lead to the speculation that in a world of science, scientists in short supply will emerge as the elite center of power. Others take the view that administration (statesmanship, if you like) is an art or a science sufficiently demanding and complicated to require a specialist, as science requires a specialist. Under this doctrine, scientists would not assume the role of administrative leadership except when they can create and administer the techniques and procedures of government.

Democratic doctrine asserts that no class is endowed with the right to govern, but that all classes should be represented at the centers of power. Is this what we mean by participative management?

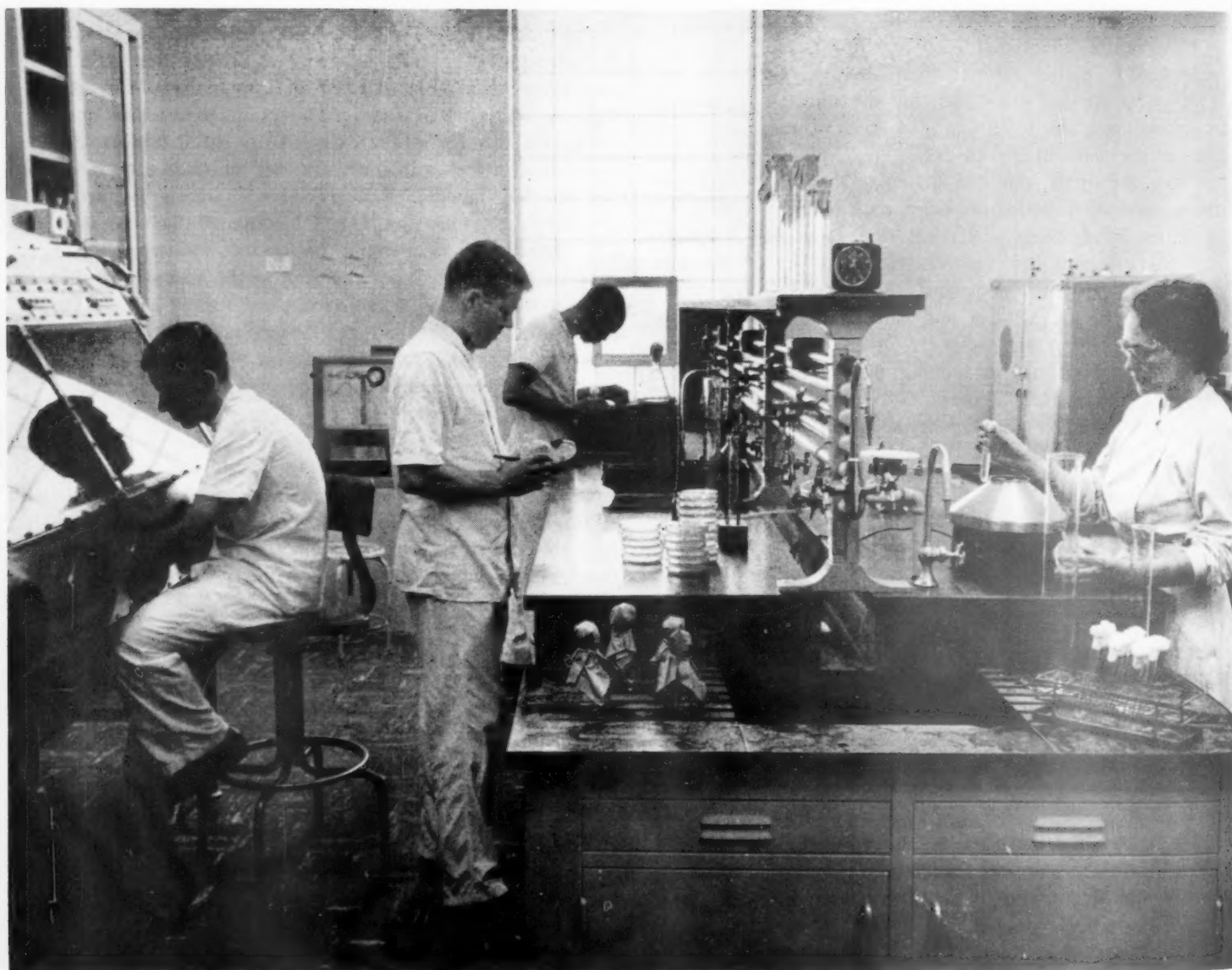
NOTE: Many of the ideas expressed in this paper emerged from a graduate class in Industrial Relations taught by the author.

1. National Science Foundation (59-50), Table A-12, November 1959.
2. National Science Foundation (59-50), November 1959.
3. National Science Foundation (60-35), Number 20, May 1960.
4. *Ibid.*
5. National Science Foundation (95-50), Table A-13, November 1959.
6. *Ibid.*
7. *Scientific Man Power Bulletin*, National Science Foundation (60-22), Number 11, April 1960.
8. *This Week Magazine*, November 6, 1960.

by JOHN SMITH HERRICK

# IS MANAGEMENT RESEARCH DIFFERENT?

## A Report on a Study





RESEARCH, along with its results, is impinging upon all aspects of American life. It affects our food, clothing, shelter, and health, and our national and local defense preparations. Indeed, the success of the management of our research, and especially that conducted by the Federal Government for defense purposes, may determine whether we are in a life or death climate.

The entire bill for research in the United States last year came to around \$10 billion. If this amount were considered in terms of dollars only, it would seem that the magnitude of the human endeavor the \$10 billion represent would warrant the expenditure of additional human effort to improve the effectiveness and economy of research operations.

While many studies have been made to evaluate and, hence, improve the effectiveness of these operations, this effort should be a continuing one. For this reason, another study was conducted recently, findings from which are being reported here.

In one of the earlier studies, an "unvalued" graph, shown here in Figure 1, was used to demonstrate the use of time by different levels of scientists.\* The chart shows, for example, what proportion of time was spent on administering and supervising, on planning, executing, reporting, and on miscellaneous tasks.

The terms used in the chart differ only slightly from the ones usually found to express principles of management. These terms were specific for the study of the time. They offer a clue to the subject of the more recent study being discussed here. Also, they provided a basis for a managerial analysis of the work being done in the research division.

In the recent study it was felt that each of the processes could undergo analysis, and the first one selected was "supervision." Also, a clinical type of approach was considered best. That is, the people who were actually engaged in biological research and development were to be asked to participate.

### Would Lend More Credence to Results

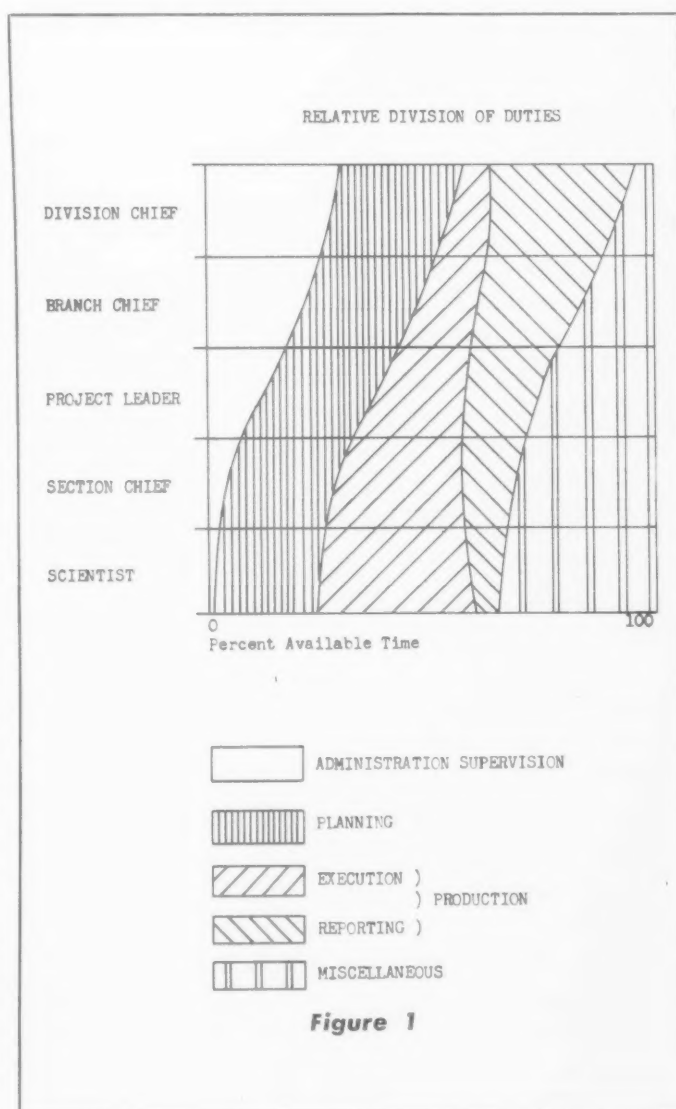
The broad plan of the study was based on the assumption that consultation with research supervisors who apparently were successful would lend more credence to any results that were forthcoming. An attempt was made to analyze the mental processes involved and distill the results, with the hope of finding data, or a "product," that would be useful over a wider range of effort.

Experience had shown that many capable research supervisors seem to supervise in a somewhat similar manner. In other words, the supervisors ask certain kinds of ques-

tions when reviewing the planned or actual work of their subordinates. The experiment was to ascertain these questions, reduce them to their common denominators, and then build a solid foundation for use by all research supervisors.

It was recognized that this was a search for something that was vague. It was an effort to find out what made a successful man-to-man relationship, the essence of supervision. Although the target was difficult, the relationship under review was a key factor in which an improvement promised a substantial effect on the \$10 billion investment in research mentioned previously.

As a preliminary, some supervisory scientists, considered successful in the scientific community, were consulted. Without giving away the intended use of the information, discussions were steered to how those scientists supervised their subordinates. The discussions were satisfactory, and the information developed was similar to that which had



\* John S. Herrick, "Using Work Sampling to Study the Activities of Research Workers," *The Journal of Industrial Engineering*, Volume X, Number 1 (January-February 1959).

## MEMO AND QUESTIONS SUBMITTED TO RESEARCH SUPERVISORS

It would seem that there would be several points, during the course of research and development work, wherein there should be quite a degree of managerial control exercised. Some of these might be:

a. Before work is started—A request might come from outside the organization, or someone from within might come up with an idea and want to do some investigating.

b. Progress—As work progresses along a certain search, a review might be desired to determine whether there is reasonable progress or a standstill.

c. Completion — Upon completion, a review should be desired for a number of reasons. One of these is to determine the contribution to the larger effort.

In making an appraisal, certain questions might be asked and answered. They could be put directly to the person or persons participating. Or, they might be questions the reviewer would ask himself in order to exercise the right amount of supervision.

Questions for the different progress points, indicated in the first paragraph, might be quite similar or they might be completely different.

Please review the attached questions; consider whether you would use different ones. Then send me the questions you would ask — either verbally or mentally. Thanks.

.....

1. What contribution would this work make to the objectives?

2. Is this the best way of finding the desired information?

3. Is there a less expensive way of finding this information?

4. Have all sources of contributing information been explored?

5. How does the proposed/accomplished work fit into what I am trying to accomplish in my organization?

6. Are the people, whom we have, capable of carrying this search to its conclusion?

7. What check points are established to tell me what I need to know about the progress of the new work?

8. Is the plan complete enough to prevent tangents?

Figure 2

been anticipated. Even some of the specific questions became clear.

Since the questions had to serve a penetrating purpose, design was important. The purpose—supervision—is essentially an exploration of what another individual is about to do, is doing, plans to do, or has done. The questions allow the supervisor to compare the answers with something else and thereafter draw conclusions as to how well the job is being, or was, done. The "something" that he uses for comparison is likely to be his own knowledge of, and experience with, the subject. Therefore, the questions had to be designed to draw out the thoughts of the people who would be asked to review them.

It should be pointed out that, for effective supervision, knowledge and experience in a subject are not enough by themselves. In fact, people have been known to have a considerable store of knowledge on a subject—and considerably more than a majority of their peers—yet, when placed in supervisory positions to draw upon these capabilities, the total output of work was not increased as anticipated. At times, the reverse happened. Instead of multiplying the effort, the results were less than the individual might have produced had he worked without supervision.

Obviously, no one reason can be ascribed for a failure such as this. Yet, a common observation is, "Oh well, he just isn't a supervisor."

Putting aside some of the obviously personal shortcomings, it was felt that supervisory failure might result from a lack of knowledge of what to do when evaluating or analyzing other people's work. This possibility lent further potential value to the exploration of questions used by successful supervisors.

In Figure 2 are the memo and questions used in the recent experiment. The memo was designed to outline the requirements in brief form to stimulate recognition of the possibility of different project time frames and to solicit cooperation.

### The Questions Would Be Suggestive Only

Further, it was hoped that the memo was worded in a manner that would be non-restrictive and would encourage addressees to think over and reflect upon the requirements. Thus, the responses would indicate the process which was used, and the wording of the questions would not influence the answers. Particularly, the questions would be suggestive only, and the responses would give a more true picture.

Because of the volume of administrative paperwork which passes over most supervisors' desks, it was felt that the mere mailing of the two pieces of paper would not be enough. Hoping to make the replies take the form of responses to an appeal, telephone calls were made before the papers were sent out. The first few calls included some detail. But as an inkling of the tenor of the responses was gained, fewer details were given and more appeal was put into the calls.

The experiment was performed in two parts, one part

about a year and a half after the first. This time spread has no significance, except that the effects of any particular installation climate or environment were not desired in the responses. Therefore, equal numbers of questions were distributed each time.

Participants were selected from each of the general classifications: (1) research, (2) development, (3) testing, and (4) engineering. This categorization was not perfect. In some cases, for example, vertical structure tended to lap over into other classifications. However, this factor was considered to have only a small effect on the results. Thus, it was felt, a logical base was built for presenting the questions.

### Questions Form the Foundation of Evaluation

The set of questions shown in Figure 2 was to form the nub of the experiment. It was not intended that the questions be fixed or formal. Instead, they were to be suggestive of the desired information. Questions of some kind, whether in the supervision of research or in any other activity, form the foundation of the evaluation made by the supervisor. However, the wording is not always the same, nor is the sequence of words. This is the reason it was hoped that the suggested questions would be only that—suggestions.

The first question—*What contribution would this work make to the objectives?*—is important for determining if the work under review has value. Whether the research is being conducted for the sake of knowledge, or for finding a missing element of information in a research project, or for engineering a final item, all work should contribute to the objectives of the organization.

The second question—*Is this the best way of finding the desired information?*—is one of technique. For instance, acidity of a solution can be determined by the simple use of litmus paper. However, if a quantitative measure of acidity is desired, the shades of color in litmus paper are not adequate. The organization and plan of work must be reviewed thoroughly in the nonrepetitive types of work.

Question 3—*Is there a less expensive way of finding this information?*—is asked since fund limitations or other limitations may exist. In problems of physics, chemistry, bacteriology, biology, and the like, expensive items of capital equipment are frequently needed. The supervisor's knowledge and experience may provide a way wherein the work may be done as well, or better, and less expensively. Resources should always be reviewed.

Question 4—*Have all sources of contributing information been explored?*—is more pertinent in research than in most other lines of work. In planning and accomplishing research, the voluminous outpouring of scientific and technical information must be considered. New texts are appearing on all subjects constantly. Trade journals publish new and different findings weekly and monthly. Failure to uncover work already done elsewhere might cause a needless expenditure of time and resources.



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Question 5—*How does the proposed accomplished work fit into what I am trying to accomplish in my organization?* appears to repeat the first question. However, the two questions, though similar, should be considered separately. Organization of work is always an important consideration. In research, a proposed work will probably contribute to the organization's objectives, since objectives are frequently presented in broad terms anyway. However, recent guidance might cause the supervisor to want specifics included.

Question 6 asks: *Are the people, whom we have, capable of carrying this search to its conclusion?* It is not without precedent that work has been started which proved beyond the capabilities of the people available. In research particularly, an evaluation of the knowledge obtained is often a function of the people doing the work. Or, work in one discipline may require information from another before an hypothesis is adequately verified. This is part of the principle of direction.

Question 7 asks: *What check points are established to tell me what I need to know about the progress of the new work?* Work planning requires establishment of check points so that information may be fed back for comparison with the plan. Work, in even the most abstract theory, must have some kind of time relationship so that a decision can be made as to whether the work is worth what it will cost. Of course, this is not the only factor to be considered.

The eighth and final question asks: *Is the plan complete enough to prevent tangents?* This question involves a high degree of judgment. Disregarding the mathematical definition of a tangent, a tangent as applied to research work is difficult to define. What may be a tangent to one super-



visor may be "just the approach needed" to another. Further, one of the more difficult decisions to make comes when judging whether a particular investigation is consequential to the effort of the unit. The point is, there is a need for human evaluation of the necessity for another man's effort.

The eight questions were not intended to be the alpha and omega of research supervision or of any kind of supervision. Rather, they were intended to provide a starting point. From these idea-ticklers it was hoped that the supervisors would continue on and supply better or more pertinent queries. Then, from the questions submitted, a digest or abstract might be made which would develop some highly usable "pat" questions.

### Results of Experiment Were Surprising

Results of the experiment were surprising. Replies to the eight questions ranged all the way from questioning the effectiveness of the personal contact of the investigator and the semantics of the memo and the test questions, to the climate of the recipients' management atmosphere. For instance, one of the scientists, consulted early in the design of the approach, replied to the test questions: "It is not clear to me, what information you are seeking as requested in your memo."

For some, the lead-off sentence in the memo caused such intense involvement they never got back to the intent of the communication.

For instance, one said: "Since I am engaged in basic research and since I believe that (1) 'managerial control' as such cannot be applied appropriately to basic research, and (2) attempts to 'manage' basic research may hinder rather than help, I can not answer your questions." Another comment was: "I am not certain what is meant in the first paragraph of the memo wherein the term 'managerial control' is used. Is this control to be technical or otherwise?"

Reactions such as these were not unanimous. One highly competent scientist, known for his ability and particularly for his theoretical conceptual ability, replied: "After reviewing the sample questions, I came to the conclusion that these questions are basically the same ones which we ask in our branch before initiating a new program."

As for the questions themselves, the most highly controversial one was Question 8, the one on the prevention of tangents.

Involvement with this question was most frequent as the work came nearer to basic or fundamental research. This might be better understood through a consideration of the word "serendipity." Serendipity means the finding of new knowledge which was not being sought at the time. The discovery of vulcanization by Goodyear is cited as an instance in which benefits to humanity would have been slower in coming except for an accident. Supposedly, the scientist-supervisor feels that a natural outgrowth of work on tangents is serendipity.

Not everyone was opposed to the concept of managerial

control; nor was everyone sidetracked by the questions. It was found that as the work of the participants neared product-work, disagreement lessened.

Finally, in engineering work there was an almost unanimous responsiveness. In fairness, it should be pointed out that a few persons, associated with research, came forth with very responsive answers — and questions.

Because of the way the responses to the memo and the questions turned out, there is no absolutely clear-cut, single answer to be derived from the experiment. Instead there are two sets of results. One is concerned with the questions, as aids to supervision; the other, with the principles and practices of management, as applied to research.

Regardless of which time frame of the experiment is used, the questions were generally acceptable. Some responses indicated that questions should be more specific. Others indicated that the questions should be more general. Overall, it was found that questions, such as those submitted, were used. Also, they were used along the lines proposed.

It was confirmed that questions should be adapted to the situation of any given time and should not become stereotyped or routine. It was borne out that supervision is a human relations type of problem which has no particular peculiarity in biological research. This was shown by the fact that, to supervise effectively, questioning, comparing, and rendering of judgment do take place.

A final word on the principles and practices of management in research seems appropriate. It is generally recognized that the principles of management are best explained and set forth in the basic work of Henri Fayol. However, his exposition on the five principles is so broad that many explanations and sub-groupings are necessary to deal with the many-faceted human personality. Thus, other investigators have attempted to subdivide and clarify the principles.

### Attention Drawn Away From the Fundamentals

Therefore, instead of a general understanding of Fayol's work, attention has been drawn away from the fundamentals by the myriad interpretations. Thus, there are many variations in understanding among contemporary management experts. If there are variations in understanding among these experts, what can we expect from other people with greater training and experience in other fields?

As a result of this study, and other work on the subject, it is felt that the close-in supervision of technical work should be exercised by people trained in the same or allied disciplines. However, as functions progress toward the administrative function, direction should be assigned to people who have less trouble with the ideas and concepts of management. They may, or may not, be persons trained in the operational disciplines.

An answer such as this was indicated in the February 4, 1961, issue of *Business Week*, when it captioned a news item "NASA Gets Administrator, Not A Scientist, To Guide Non-Military Space Development." ✓



# Bridging the Gap between Top and Middle Management

*Among the many pitfalls of the communications process is the tendency for one level of management to overlook the importance of keeping the other levels informed of goals and decisions that affect more than just the one group. When this situation is allowed to exist, misunderstandings and friction are bound to follow.*

by LEWIS R. ZEYHER

In many companies the members of top and middle management\* do not always effectively blend their combined efforts toward their usually well understood company objectives. This situation might be defined as an interruption, break, or gap in the proper flow of information.

The types of gaps that arise among the layers of management vary greatly. Here are several examples.

1. A serious problem which requires top-level action develops at a lower level of management. The problem is not brought to the attention of the proper executive because one staff or line supervisor fears he might get another into trouble.

2. Members of middle management are exposed to an executive development program. Then when they attempt to introduce a new technique they learned from the program, the members of top management, the men who asked the

\* In this article, top management is considered as including the president and vice presidents of a medium- to large-sized company, while middle management is construed as referring to the plant managers, sales managers, superintendents, and staff supervisors.

In small companies, the top management group might be said to include the president or owner. His employees would represent the middle management group, thus making a much narrower gap between the two management groups. Generally the problem of bridging the gap is less acute in the small company, but not always.

middle management group to participate in the program, give little encouragement as the techniques are being applied.

3. Top executives proceed with a new plan which vitally affects the middle level of managers, but fail to keep the latter informed or to allow them to participate in making the decisions involved.

4. Field men or salesmen are overlooked when important information is released.

5. Middle management members are ill-informed about the company, its executives, and its policies, future plans, and objectives.

6. Rumors which happen to be detrimental to the company are permitted to flow uninterrupted.

7. Information about changes in important customer relations fails to reach the proper personnel.

8. Technical information regarding engineering changes and modifications fails to be passed along to the main office engineering staffs by field men or erection crews, and vice-versa.

9. The expected whereabouts of important executives or key personnel is not passed along in advance to those most concerned.

10. Important changes in duties and responsibilities of executives and middle-management supervisors are not brought to the attention of those who may be most affected.

11. Supervisors are seldom briefed to assure understanding of important written instructions that have been released. The exact intention of top management in promulgating new policies by the written word does not always coincide with middle management's understanding of them.

12. Importance of feedback on the results of the introduction of new operating procedures is overlooked.

13. Mechanical failures which delay shipments to certain customers after tight schedule promises have been made are not brought to the attention of the salesman concerned in order that he may advise the customers and perhaps supply a new shipping date.

14. During union-management negotiations covering a new contract, progress of the meetings is not passed along to all supervisors.

How does one know that such a "gap," or some other type, exists in his own organization? Sometimes the gap is discovered merely by chance: some tangle or operating problem is poorly handled and this information filters up to top management. If the problem arises several times, an investigation may be launched. It is then revealed that the organization's communication system has failed in these particular instances or that it has never worked effectively.

Several specific tools to use when checking the efficiency of communications are attitude surveys (all employees); sampling; controlled tests (written and verbal); specially designed written questionnaire; telephone poll; personal interviewing of personnel involved; independent survey made by consultants.

Some of these suggestions overlap. But the size of the company, the nature of the products, the type of organization, the depth of the problem, the type of company ownership (family or publicly owned), and related considerations will all have a bearing on the type of approach that should be used.

### Importance of Bridging the Gap

Importance of bridging the gap between middle management and top management and of using sound management principles to do so is strikingly evident in an illustration from the Civil War—the eight reasons given by General Lee for the loss of the Battle of Gettysburg. Analysis of these reasons, listed below, is taken (by permission) from *The Battle of Gettysburg*, a Guided Tour, by General E. J. Stackpole and Colonel W. S. Nye (published by The Stackpole Co., Harrisburg, Pa., 1960).

To emphasize the management principles involved, I have inserted them in brackets. Note that poor communications is indicated in six of the eight reasons, and that poor planning, insufficient training, lack of coordination, poor control and followup, slack discipline, and weak organization also contributed in varying degrees to the loss of the battle.

1. He thought his men invincible; in other words he was overconfident. [Poor communications between him and his staff; a lack of knowledge of the capabilities of his fighting men]

2. Lee's ammunition was exhausted by the all-out artillery preparation just prior to Pickett's charge. His small-arms ammunition reserve was low, as was his reserve of rations and other supplies. He could not recoup these shortages by captures or by "living off the country." He had to withdraw. [Poor planning; possibly poor communications]

3. The Confederates failed to assess proper weight to the power of the defense when infantry was deployed behind a stone wall and supported by powerful, efficient artillery whose commander had made provisions for a reserve of ammunition. [Superior planning on the part of the Union forces; poor training on the part of the Confederate officer who exercised poor judgment]

4. Lee's use of discretionary orders to corps commanders who either did not understand such methods or who were recalcitrant. [Poor training and poor communications;—Lee may not have properly communicated to his corps commanders what he meant by discretionary orders and at what time or events such orders should be exercised. If they were recalcitrant, slack discipline is indicated.]

5. Failure or absence of lateral liaison between corps. Failure to provide for proper coordination of main and secondary efforts. [Poor planning; poor communications; perhaps poor training in such management functions as delegation of authority, followup, control and coordination]

6. An unusual lack of thorough terrain reconnaissance on the second day. Both Lee and Longstreet share in this fault. [Poor planning]

7. A lack of strategic and tactical intelligence, owing to Stuart's absence from the area at a critical time. [Poor communications and possibly slack discipline. He was supposed to be there.]

8. The presence of two inexperienced corps commanders, Ewell and Hill, and the corresponding absence of Stonewall Jackson. [Poor training; lack of sound organization; possibly, too, poor communications]

To apply sound principles of management to bridge the gap between one level of management and another, one must convert the principles into specific actions, such as:

1. Improve the descriptions of the positions. Follow up on these descriptions to assure compliance by the supervisors. Delegate and assign responsibilities.

2. Occasionally sample the effectiveness of the plant and the office communications.

3. Encourage personal business contacts between the office and the shop personnel and among all levels of management.

4. Write as many instructions as practicable.

5. Make better use of control reports and give further instructions and explanations when necessary. Too often these reports are no more than pieces of paper that are circulated. Periodic samplings to determine their effectiveness might help.

6. Design and distribute organization charts. Keep them up to date.

7. Schedule staff meetings at the different management levels. Conduct the meetings effectively.

8. Plan and schedule private conferences with each of the supervisors reporting to you. These conferences should last at least one hour and should be devoted primarily to specific problems of the supervisor. Discuss his aims and ambitions. Assist him in furthering his aims. Try to create a genuinely permissive atmosphere in which the supervisor feels free to express himself frankly.

9. Use objective merit rating programs. When conducting a merit-rating interview with the person rated, do not let the task appear to be a chore for you. Such an interview is important to the person rated; it should be important to you.

10. Remember the often repeated statement — The real strength of an executive rests in the people he manages.

11. Do not tolerate management featherbedding. The janitor, the production worker, and the office clerk are critical of management actions.

12. Remember that the practice of human relations is like that of trying to be a gentleman — the behavior must come from the heart.

13. Don't violate the dignity of the individual.

14. Make your communications clear. Be specific; include the names of places, events, persons, and the time and the reasons.

15. Be sure the purpose of your message is understood. Is the purpose to direct, to praise, to reprimand, to inform, to advise, to warn, to report? Does the employee know which of these was intended?

16. Develop loyalty in your supervisors — and reciprocate.

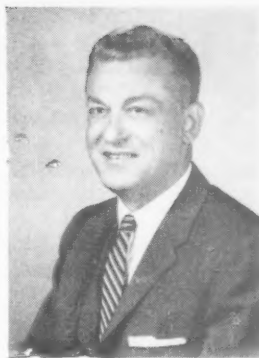
17. Train your supervisors. Try to help them do their present job better and prepare for a better job. Most employees need some kind of feedback, some method to assure them they are going in the right direction. Their boss is the most likely person to provide this feedback. Feedbacks can be positive or negative. A positive feedback is supplied by recognition, praise and rewards, which properly motivate people in the right direction. A negative feedback is provided by criticism, reprimands, failure to recognize good performance, slow pay raises, and failure to promote.

18. Avoid favoritism or appearance of favoritism.

19. Be fair, firm, and uniform when disciplining, but do not oversupervise.

20. Improve the communication devices you already have in your company by using guides such as:

- a. Use more than merely external forms of communications such as notices, company magazines, letters, speeches.
- b. Tell enough. Use the right words. Don't be vague. Try to anticipate what questions will arise and provide the answers.
- c. Try to appeal to the supervisor's self-interest; stimulate him into action.
- d. Practice listening more — and not to just what you want to hear.
- e. Try to counteract any possible feelings of insecurity and fear.
- f. Be sure that all supervisors concerned in an action you take are informed. Include those who were supposed to be at the meeting but were absent that day.
- g. Eliminate all unnecessary communications. Keep the plant bulletin boards free of all obsolete notices.
- h. Make your communications brief and concise.
- i. Select the proper communication media. Should the message be transmitted by "slow freight" or by "jet"? Should it be presented now or later? By person, by telephone, telegram, or letter?
- j. Secure the supervisor's complete participation.
- k. Be sure you are getting two-way communication.
- l. Set the tone to your communications. The inflection in your voice, your choice of words, unintentional



LEWIS R. ZEYHER, of Jenkintown, Pa., has his own management consulting company, Zeyher Associates. He is also Chairman of the Board of Directors for the Philadelphia Chapter of S.A.M. Before establishing his own business, he was Vice President with Daystrom Organization; Works Manager, at Columbia Records, Inc.; Factory Manager, at Johnson & Johnson. He has a B.S. degree in mechanical engineering from Lafayette College, and he has taken graduate work at the Univ. of Pa., Columbia Univ., and Rutgers Univ.

rudeness, sarcasm — any of these improperly used could destroy effectiveness.

Because of the pressure of work, ordinary rules of courtesy are not often followed, especially when conferring with subordinates. Some of these rules include:

- a. Do not accept telephone calls or permit other interruptions.
- b. Make the visitor comfortable.
- c. Encourage smoking — even if you do not smoke, suggest it or he may not indulge.
- d. Treat him as you would the Board Chairman.
- e. Do not dominate the conversation.
- f. In discussing difficult subjects, be tactful.
- g. Do not have your secretary sit in the same office or even nearby — this may be disconcerting to the visitor.
- h. Listen to his whole story without interruption.
- i. Be pleasant and cheerful and not too grim.
- j. Be sympathetic to the visitor's problems—they may seem trivial to you but are of the greatest importance to him.
- k. Do not keep him waiting if he has made a previous appointment.
- l. Do not be evasive in answering questions. Subordinates respect frankness, too.
- m. Do not use profane language even to the rugged shopman; he will not respect you for it.
- n. Refrain from narrating the so-called questionable jokes. He enjoys hearing them, too, but not from you.
- o. Contain your anger. Be patient; you have made boners, too.
- p. Do not "talk down" to your subordinate. He is probably more intelligent and better informed than you think.
- q. Do not lecture him. Remember he has come for help and not to hear a sermon.
- r. Avoid sarcasm. Remember yours is a captive audience.
- s. If a commendation is in order, by all means give it, but not by flattery. He can be embarrassed, too.
- t. If a reprimand is required, do not speak in generalities. Be specific. He is fair-minded, too.
- u. To sum up: protect at all times the dignity of the employee. Treat him as you would like to be treated by your boss.



## Overcoming Profits Squeeze —Theme for 1962 Management Engineering Conference

The 17th Annual S.A.M.-A.S.M.E. Management Engineering Conference, April 4, 5, 6, 1962, will concentrate its entire program on the training of management personnel in methods of "Overcoming the Profits Squeeze." After careful survey of the problems facing management today, planners for the conference concluded that overcoming the profits squeeze is the greatest problem that confronts management today.

Simultaneous sessions for both S.A.M. and A.S.M.E. members, together with non-members, will be conducted on the following general themes: "Work Measurement—Wage Incentives"; "Production Planning and Control"; "Cost Reduction and Profit Management"; "Manpower Management"; "Integrated Data Processing"; "Employee Training"; and "New Communications Techniques—Sight and Sound." In addition a Marketing Management Game will be conducted by representatives from the Special Educational Projects Division of the Marketing Department of Remington Rand Univac Division of Sperry Rand Corporation. Workshops will also be conducted on "Critical Paths Scheduling," "Human Relations," and "Work Sampling."

Co-Chairmen of the Conference are John F. Blazier, Remington Rand Univac Division, Sperry Rand Corporation, and William T. Short, Manufacturing Engineering Service Dept. of General Electric Co., Schenectady, N. Y. Mr. Lee S. Denegar, Director of Public Relations, A.S.M.E., is in charge of publicity; Mr. Joseph E. Scott, Vice President, Meylan Stopwatch Corporation, is Exhibits Chairman, and Dr. V. Donald Schoeller, Director of Management Development, Remington Rand Division, Sperry Rand Corporation, is in charge of the pre-session orientation program. Other members of the committees are: Fred Gropper, E. I. du Pont de Nemours & Co.; Richard N. Paulson, American Cyanamid Co.; Richard V. Scacchetti, Maxwell House Division, General Foods Corp.; W. Clements Zinck, Arbogast and Bastian, Inc.; Norman E. Frick, Sinclair Refining Co.; Victor M. Gelin, E. I. du Pont de Nemours & Co.; William E. Porter, Consultant, Rath and Strong, Inc.; Mrs. Gene M. Weeks, Gene Weeks & Associates; and Professor Oliver J. Szelove, Newark College of Engineering. Staff members are Miss Marion Cusick and Wm. P. Layton.

## Small Business Program Recruits Employers

A recent survey of school children by the Opinion Research Corp. confirms an earlier study which Republic Steel Corp. made with thousands of its employees:

*The average American, young or old, knows little about the economic and political principles behind our democratic way of life.*

Sample questions showed that:

- 60% believe labor is the only productive factor.
- 59% believe all increases in productivity should be paid out in higher wages.
- 45% believe Communism needs no capital.
- 34% believe the "Electoral College" is a special school for Congressmen's children.

To meet this demonstrated need for better economic understanding, Good Reading Rack Service, Division of Koster-Dana Corp., New York, has announced a new management-employee communications service, covering employee economic education.

It consists of a series of 10 booklets, each covering an important area of our economy. This is the first complete course of 10 booklets in basic economics, scientifically designed for employee reading.

The author is L. C. Michelon, management consultant and coordinator of Communications of Republic Steel Corporation, Cleveland. He is also the author of the text *Basic Economics*.

The first three booklets in the series are: 1) "Profits—The Key to Economic Growth and Job Security" 2) "Compete or Retreat—The Ability to Compete Is Survival Insurance" and 3) "Productivity—The Magic Lamp of Progress".

The next three booklets soon to be available, are: 1) "Competitive Costs—The Sure Way to Customers and Jobs" 2) "Taxes—The Case of the Vanishing Dollar" and 3) "Your Personal Economics—Thrift and Prudence Pay Off".

## Secretary Hodges Enlisting Aid of Association Executives

Secretary of Commerce Luther H. Hodges announced recently that he is enlisting the aid of more than 800 trade association executives to expand United States exports by focusing attention on specific commodities.

Secretary Hodges said, "In the past year much has been done to develop a new interest in exports. The efforts of the department's National Export Expansion Committee, which includes heads of leading national business organizations, and the 33 Regional Export Expansion Committees have been most successful in stimulating manufacturers who have never before seriously considered marketing abroad.

"In fiscal 1961, our exports reached a record value of \$19.9 billion—a level 10 per cent higher than that of fiscal 1960. Yet only a small percentage of our manufacturers benefited from this business. The time has come when we must arouse interest among the large majority who are not now regularly engaged in foreign trade by directing attention to opportunities for export of specific commodities. This can best be done, we have decided, by enlisting manufacturing industry associations which have specific commodity interests."

The secretary said he was offering the facilities of the department to executives of these associations to help them set up and carry out export promotion activities.

Export expansion efforts by leaders of

private enterprise would pay dividends in terms of additional markets, increased profits, and higher employment as well as contribute toward balancing our international payments account, he asserted.

Accompanying the secretary's letter was a 10-point export promotion program which, among other suggestions, calls upon trade associations to:

Publicize information on foreign markets and on export services available from the Department of Commerce, other Government agencies, and private sources.

Set up conferences or seminars to discuss overseas market potentials for each industry's products.

Establish a counseling service to pool know-how on selling techniques in foreign markets.

Encourage the "mother-hen" concept by urging internationally-experienced firms to take on export management for inexperienced manufacturers of complementary products.

Set up a "clearing house" for export opportunities.

Build long-term interest in export markets by seeking and analyzing foreign markets for their particular industries.

Promote product participation in international trade fairs and in U.S. trade centers abroad.

Organize periodic tours of industry groups to investigate overseas markets for their products.

## Drive-In Vacuum Cleaner

New innovation for service stations is a powerful coin-operated vacuum cleaner, resembling a gas pump. Motorists pay their dime and may clean the entire car interior, while they're getting gas. The vacuum pump is being market-tested in England.

## Highest Speed Data Retrieval, Automatic Storage Features Of New Mechanism

A new machine which can automatically search a 32,000-page file and present desired information in less time than it takes to drink a cup of coffee has been developed by FMA, Inc., it was disclosed today.

Called FileSearch, the machine combines new advances in optical and electronic techniques and is able to retrieve stored information from micro-filmed files at the fastest rate yet known.

Because the system stores 32,000 standard-sized magazine pages on a single reel of microfilm, FileSearch can accommodate over 1,600,000 pages of information—enough to crowd 40 four-drawer file cabinets—in a single file cabinet. When information is desired, the machine automatically searches the microfilm reels at the rate of 6,400 pages a minute, making copies of the requested material.

The FMA FileSearch system is basically composed of a recording unit and a retrieval unit. The recording unit photographs files of documents along with a description of each document's contents which is coded in the form of opaque spots. These are stored together on reels of microfilm.



# Modern Management Treatises

## Scientific Management of Marketing Operations.....by Al N. Seares

In this book, Al N. Seares demonstrates that scientific management of the marketing function (a function rooted primarily in the inexact social sciences) is necessary, profitable and feasible; that it can be carried out, under trained leadership as an aid rather than a detriment to creativity.

## Financial Approach to Industrial Operations.....by Alvin Brown

Although problems of financial management are the immediate responsibility of financial executives, the author of this treatise points out these problems are nevertheless the concern of everyone in a business organization. He shows how the function of financial analysis may facilitate the solution of managerial problems generally.

## Cost Control Through Electronic Data Processing.....by Phil Carroll

Today, management at every level can obtain facts from an integrated data communications network that can report rapidly on the basic operation of every department of an organization. In this book, "Mr. Cost Control" sets forth some of the bench marks that must be considered to materialize the inter-relationship of measurable data which contribute to sound management decisions.

## Suggestion Plan Guide.....by the Reading (Pa.) Chapter, S.A.M.

Like any other management institution, a suggestion system must have realistic objectives, sound policies, workable procedures and criteria by which its effectiveness can be gauged. This reference work hews to such a framework in presenting basic standards for the newly installed or remodeled suggestion system.

## The "Results" Approach to Organization.....by Edward C. Schleh

The "other side" of some commonly accepted viewpoints on management authority and responsibility are sought out in this book. In accenting accountability for results rather than exercise of activities, Mr. Schleh examines "line vs. staff", considers the problem of work improvement at all levels on the basis of "balanced" and "blended" effort, and proposes a principle of "results of optimity" in reference to over-success of one activity at the expense of others in the total enterprise.

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### Management Day at Philadelphia, January 26, 1962

The Philadelphia Chapter of the Society for Advancement of Management, in cooperation with its National Headquarters, will present a Regional Conference for the Delaware Valley area on Friday, January 26, 1962, at the Warwick Hotel. It will be called "Management Day" with Mr. Erwin Seltzer, Manager, Industrial Engineering, Electric Storage Battery Co., Philadelphia, serving as Conference Chairman.

The Conference will begin with a luncheon at noon at which the Philadelphia Chapter will present its Annual Award to an outstanding manager of the greater Philadelphia area. Previous recipients of the award have been: Thomas McCabe, President of Scott Paper Co.; Alfred H. Williams, former President of the Federal Reserve Bank of Philadelphia; and Dr. Gaylord P. Harnwell, President of the University of Pennsylvania.

The principal speaker at the luncheon will be Mr. R. Stewart Rauch, Jr., President of the Philadelphia Saving Fund Society, and Chief Executive of the Philadelphia Food Distribution Center. His topic will be, "Management's Role in Promoting Economic Health."

Two "shirt-sleeve" roundtable workshops will be presented concurrently at 2:30 p.m.

Mr. Phil Carroll, a nationally known industrial engineer, who has led over 100 workshops of this type throughout the U.S., will lead the session on "How Supervisors Can Save Dollars." Special emphasis will be placed on the techniques in today's speed of production and marketing which can help the supervisor to uncover and prevent profit leaks.

Another workshop will be "Work Sampling Workshop for Industrial Engineers," led by Charles B. Cooper of the Engineering Management Department, General Electric Company, Schenectady, New York. This presentation has been extremely popular with people concerned with the practical applications of work sampling to methods and manufacturing problems. Registrants will participate in a work sampling demonstration and will solve a problem using the five-step approach.

Frank A. Lalley, Acting Director of Procurement for the City of Philadelphia, is President and Regional Delegate of the Philadelphia Chapter, S.A.M., and Kasmir Kalwinsky, Manager, Methods and Standards, International Resistance Co., is the Alternate Regional Delegate. Mr. Carl A. Beck, President of the Charles Beck Machine Corporation, is Governor of the Chapter, and Mr. Gregory D. Barnes, Charles Beck Machine Corp., is Alternate Governor.

### Professor Walters Receives Life Membership

Prof. Emeritus J. E. Walters, of George Washington University, and a member of the Washington S.A.M. Chapter, has recently received a life membership in the Society for Advancement of Management.

### Businessman's Compact Seminar Unique Feature of Long Island Chapter

The Businessman's Compact Seminar, a unique feature of the annual program of the Long Island Chapter, was held at the Garden City Hotel on October 10. The subject, "Cost Improvement Program," created considerable interest among those who attended. Seminar leaders for the program were Clay Shafer, Manager, Industrial Engineering, and Frank Morgan, Head, Standards and Cost Improvement, both of the American Bosch-Arma Plant in Garden City. These men were the originators of C.I.P. in this company.

The Businessman's Compact Seminar is a concentrated and meaty three hours of practical business know-how, presented in the evening for the convenience of the busy management-oriented individual. This type of program is popular with the Long Island Chapter.

Discussions centered around a participation program of cost reduction for executive, administrative, and supervisory personnel with special emphasis on the areas which would benefit most from a cost improvement program. It was generally agreed that the C.I.P. program is one of management's most effective cost-cutting tools.

### Computers and Your Income Tax Return

Although April 15, 1962, is several months away, members of the Alabama Chapter, S.A.M., are getting ready for the occasion. Mr. George D. Patterson, Jr., District Director of Internal Revenue, spoke on the subject, "Computers and Your Income Tax Return." The presentation was well received and it was found that the word "computer" added an extra touch of mystery and an extra challenge to a subject of continuing interest.

Mr. Patterson, a native Alabamian, was well qualified to explain how the use of computers will simplify and improve the income tax system. He is a graduate of the Business Administration School of Emory University, and the George Washington School of Law. In addition to having practiced law for 18 years in Alabama, Mr. Patterson served as Regional Enforcement Attorney for the Office of Price Administration during World War II. He was appointed Regional Administrator of Price Stabilization for the Southern Region in 1961, and became District Director for Internal Revenue for the State of Alabama in 1952.

It is believed that other Chapters will want to consider a session on the study of Income Tax.

### Transportation Problem Interests Members of Chicago Chapter

On October 24 the members of the Chicago Chapter heard Frank E. Martin, Vice President and Comptroller, Illinois Central Railroad, discuss a subject of vital importance to business men living in large cities:

### "Getting to Work — A Major Problem for Business."

While not pertinent to all S.A.M. Chapters, the problem of daily commuting is one of real significance for business men in large cities, and the Chicago Chapter was fortunate in obtaining an individual of Mr. Martin's caliber to discuss this subject of ever-increasing concern. It is a problem that must be considered in the location of a business, in recruiting new personnel, and in determining compensation. Despite the construction of extensive expressway systems, the problem appears to be increasing daily, Mr. Martin said.

Mr. Martin has been in the transportation industry for many years, holding positions of increasing management responsibility in the operating, engineering, and accounting areas. He heads the accounting and control function of the Illinois Central Railroad, whose electric suburban lines provide daily service for thousands of commuters.

### Annual Program Planned For East Bay Chapter

East Bay Chapter, under the leadership of its Program Vice President, Hal Hallikainen, has arranged an outstanding series of meetings for 1962.

January 22—"The Role of the Federal Government in Labor-Management Relations," Louis S. Penfield, Regional Attorney, N.L.R.B., San Francisco.

February 26—"Employment of Surplus Funds," Bruce McKennan, Resident Manager, Salomon Brothers and Hutzler.

March 26—"Management Reorganization," Harold Lindsay, Technical Advisor to Chairman of the Board, Ampex Co.

April 23—"Accounting Aspects of Management," Richard A. Lane, Head of Management Services, Arthur Young and Co.

May 28—"Plant Tour of Smith-Corona-Marchant, as arranged by Walter Kasselbohm, Vice President and General Manager.

June 25—Ladies Night "Medical Instrumentation," M. L. Bramson, Consulting Engineer.

### Baltimore Chapter Hears F. M. Oglee

Members of the Baltimore Chapter, S.A.M., were privileged to hear a discussion on *Executive Management* at the November meeting by Mr. Frank M. Oglee of General Electric's Personnel Development Center at Crotonville, New York.

In his presentation Mr. Oglee stated that executive development is a two-edged tool of management. Executives can use it to improve their own operations and it is a must for the training of key personnel in progressive industries. Mr. Oglee's discussion was patterned after a similar session which he conducted at the well-known Columbia University's Arden House Conference earlier in 1961.

Following Mr. Oglee's talk a spirited discussion was held in which a number of members participated.

## SENIOR CHAPTER NEWS

### Milwaukee Chapter Emphasizes People

A large number of management personnel from the Midwest area attended the Ninth Annual Fall Conference of the Milwaukee Chapter, S.A.M., in Milwaukee, October 19, to hear a brilliant array of speakers emphasize industry's most important asset — its people. The program was directed to all levels of management and was well received.

Concurrent sessions were held during the morning and afternoon with featured speakers at the luncheon and dinner sessions.

The morning speakers were Mr. Howard Leslie and Mr. Wayne Ruggles, of the Value Analysis Corporation, who spoke on "Value Analysis." In the concurrent sessions, Mr. Robert Schlenzig, Chief Engineer, AC Spark Plug Division, General Motors Corporation, Milwaukee, spoke on "Creative Engineering," and Mr. Robert Mainer, Consulting Psychologist, Humber, Mundie and McClary, Milwaukee, spoke on "Leadership and Organizational Effectiveness."

The luncheon speaker was Mr. Carl J. Thomsen, Senior Vice President, Texas Instruments, Dallas, who spoke on the subject of "Value in People . . . Its Development and Importance at Texas Instruments." Mr. Thomsen stated that his company, a leader in the electronics industry, has always believed its people were the key to its success. He described the company's basic management principles—organization, formal planning programs, deliberate policy of company growth, and an atmosphere of professional management.

During the afternoon sessions the following topics were presented: "The 250 Critical Days of the Year—Everyday Dealings With Labor," by Mr. T. C. Kamholz of the National Labor Relations Board; "New Concepts in Engineering—As Related to Automation," by Mr. Harold Strickland, Vice President, Industrial Electronics Division, General Electric Company, New York; "Data Collection and Production Monitoring—Does it Pay Off" by C. J. Lawson, President, Hancock Telecontrol Inc., New York, and "Transition in Management — Today's Concepts of Human Relations," by Dr. Louis Hackemann, Hackemann & Associates, San Francisco.

The one day conference was concluded with a banquet at which Mr. Roy L. Morgan, Director, Office of Field Services, U.S. Dept. of Commerce, Washington, D.C., spoke on "Vitality in Production—American Business, Both Home and Abroad."

### Northern New Jersey Presents Plant Layout Evaluation Seminar

On Saturday, November 18, the Northern N. J. Chapter of S.A.M. presented a one-day seminar on "Plant Layout Evaluation," under the direction of Professor A. A. Kuebler, Rutgers University. Special emphasis was placed on sequence analysis, criteria for selection of layout, and travel charts. Chairman of the Seminar was John Mihalasky, N.C.E.

### Bosses' Night Proves Successful

The Bosses' Night presented by the Wilmington Chapter on November 14 was quite successful, when S.A.M. members and their bosses heard John J. Reddy, Director, Management Engineering Services, Radio Corporation of America, New York, speak on "How Management Can Improve Its Performance."

Mr. Reddy gave a stimulating discussion on the use of practical techniques and specific programs to assist management in improving its performance at all levels.

Other successful meetings held by the Wilmington Chapter was the one day Fall Conference on Management Performance Standards conducted by Mr. John B. Joynt, President, John B. Joynt Associates, and the December 12 meeting, at which Mr. Hillman C. Harris, Department Head, Statistical Control, Chambers Works, E. I. duPont de Nemours & Co., Inc., spoke on "Practical Statistics."

### O. L. Hall Speaks at Detroit's First Fall Meeting

Mr. O. L. Hall, of the Chrysler Corporation, spoke to the members of the Detroit Chapter of S.A.M. on September 5 at the chapter's first meeting of the Fall quarter.

The title of Mr. Hall's presentation was, "The Need for an Enunciated Policy," which spelled out a method for determining manufacturing costs as related to selling price and profit.

Mr. Hall was with General Motors and Ford for 12 years before he took up his duties with Chrysler some seven years ago. He has designed and installed "profit budgets," a document on corporate cost study, forecasting payroll processing, budgetary control, and capital investments, in his work at the Chrysler Corporation. He also is associated with the University of Detroit where he teaches evening courses in accounting, mathematics and statistics.

### Chapter Presidents of Region Four Have Informal Get-Together

Chapter Presidents, or their representatives, in the Metropolitan N.Y.C. area Region 4, held an informal get together meeting at the New York University Club last month to discuss ways of bringing about a closer liaison between their chapters.

The meeting was the result of a suggestion by Hugh Estes, president of the New York Chapter. The following chapters were represented: Long Island, New York, Northern New Jersey, Raritan Valley, Southwestern Connecticut, Poughkeepsie, and Westchester.

Mr. Estes offered to include information about chapter programs of all of the chapters in a monthly newsletter which his chapter is publishing each month so that S.A.M. members working in the New York area would have access to information about all S.A.M. programs planned for this consolidated area.

Tentative plans also were discussed for a program for University S.A.M. members in

## Supervisory Training Films Offered

Three new films for supervisory training have just been announced by Modern Management Films, a division of The Bureau of National Affairs, Inc. Suitable for office or plant supervision, the films are short, 16-mm. sound and color motion pictures, designed to teach basic principles of supervision and stimulate discussion of supervisory problems.

Following is a brief description of each film:

1. *Instructions or Obstructions*—Professor Paul Pigors, of the Massachusetts Institute of Technology, is the expert in this film. By use of an entertaining story and many humorous examples, he illustrates his famous "seven steps in the order-giving process," which every supervisor should follow for best results. Designed to help supervisors do a better job of verbal communication with subordinates, and to show how to get voluntary co-operation from employees in carrying out orders.

2. *"Listen, Please"*—This film highlights the importance of listening in the supervisor's every-day job. In a series of episodes at home and at work, the story shows how a supervisor's day is ruined by failure to listen to things other people were trying to tell him. In the end, he learns why listening is so important, and in the follow-up discussion after showing the film, supervisors are motivated to do a better job on this serious aspect of communications.

3. *The Case of the Missing Magnets*—In this story, the "missing magnets" represent lost productivity in a department where employee attitude is poor. Viewers watch the supervisor as he tracks down the "clues" which make the difference between high-producing and low-producing departments. The film reviews the basic principles of human relations, while at the same time helping supervisors to understand that discipline—"a taut ship"—goes hand-in-hand with human relations to build a high-producing team.

4. *The Challenge of Leadership*—This film helps supervisors identify the various elements which make up leadership—and tie these patterns back to their own daily jobs. To do this, it tells the story of five men on a hunting trip who face a crisis which threatens their lives. One man assumes leadership, and as he plans and organizes their survival he demonstrates all of the various attitudes and skills which mark a leader in any situation. In discussion following this film, supervisors are encouraged to start self-development in these same attitudes and skills.

Modern Management films may be purchased either singly or in series. They are also available for rental or executives preview. For further information write to Modern Management Films Div., The Bureau of National Affairs, Inc., 1231 24th Street, N.W., Washington 7, D. C.

the Metropolitan area to be held at New York University possibly this fall.

Tentative plans are also being made for a Chapter Officers Workshop for Chapters in the New York Metropolitan area.



## SENIOR CHAPTER NEWS



Participants at Milwaukee Fall Conference (l to r): G. A. Sievers, Ph.D., President and Clinical & Industrial Psychologist, Ind. Engineering Institute, Inc., currently S.A.M. Governor and Milwaukee Chapter Past President; R. L. Morgan, Director, Office of Field Services, U.S. Dept. of Commerce, Washington, D. C., dinner speaker; R. D. Reed, Personnel Manager, Line Material Industries, Chairman of S.A.M. Fall Conference; Harding Van Schaack, Plant Engineer, Worden-Allen Co., S.A.M. Milwaukee Chapter President; D. L. Weiss, Chief Industrial Engineer, Babcock and Wilcox Co., S.A.M. Vice President of Special Programs.

## SENIOR CHAPTER NEWS



Charter Night participants of the newly organized Greater Baton Rouge Area Chapter, S.A.M., are shown (l to r): Robert L. Taylor, Vice President—Publicity; Keith Lanneau, S.A.M. Governor; Charles W. Burns, Vice President—Membership; new Chapter President Edmond Boudreaux, holding the manual; Eugene McCann, former Vice President of Activities (now substituted by Albert Jones), and John E. Farr, Secretary-Treasurer. The November issue of *Advanced Management* carried a more complete story on the formation of the new Chapter, including a listing of the charter members. Charter Night was held September 12.

### S.A.M. Management Leadership Conference Scores Success At Notre Dame



Participants in Sensitivity and Action in Management Conference at Notre Dame (left to right): Richard Jasensky, Sales Supervisor, Nelson Muffler Corp., Stockton, Wisconsin; W. R. Steinberger, Production Manager, Maytag Co., Newton, Iowa; John H. Colby, Vice President and General Sales Manager, Johnson Service Co., Milwaukee, Wisconsin; Paul Simmonds, Plant Engineer, International Harvester Co., Indianapolis, Indiana; and Jack B. Batchelor, Plant Manager, Donaldson Co., St. Paul, Minnesota.

Management personnel from 11 cities, representing the states of Minnesota, New York, Wisconsin, Iowa, Kentucky, Massachusetts, and Indiana, attended the Third Annual S.A.M. Management Leadership Conference at the Morris Inn, adjoining Notre Dame University in South Bend, Indiana, during the period of October 22-27, 1961. The theme of this conference, which was presented jointly by the Indianapolis Chapter and the National Headquarters, was "Sensitivity and Action in Management."

Conference leadership for the five day intensive workshop was provided by Dr. Richard W. Wallen, Director, Management Training Division, Personnel Research and Development Corp., Cleveland, Ohio, and Dr. Edwin C. Nevis, also with the Personnel Research and Development Corp. Chair-

man for the jointly sponsored workshop was Richard H. Small, Meridian Mutual Insurance Co., Indianapolis, Indiana.

Registrants of the conference were given an opportunity through group participation to learn the fundamentals of productive group functioning, effective leadership, practical human relations, and the technique of training group members in leadership skills.

They received actual practice in developing sensitivity through observation and interpretation of the motives and feelings of subordinates, peers, and superiors. They were given an opportunity to learn to act by guidance through improved observations and to evaluate the impact of their actions upon others and through improved communications at all echelons.

### V-List For Future Events

- ☐ Jan. 27, 1962 S.A.M. Board of Directors' Meeting, Philadelphia.
- ☐ Feb. 12, 1962 First Indo-Pacific Management Conference, Manila.
- ☐ Mar. 27-29, 1962 American Power Conference, sponsored by American Society of Mechanical Engineers, Sherman Hotel, Chicago.
- ☐ April 4-6, 1962 S.A.M.-A.S.M.E. Management Engineering Conference, Statler Hilton Hotel, New York City
- ☐ April 7, 1962 S.A.M. Board of Directors' Meeting, Statler Hilton Hotel, New York City.
- ☐ June 23, 1962 S.A.M. Board of Directors' Meeting, Asheville, N. C.
- ☐ Oct. 6, 1962 S.A.M. Board of Directors' Meeting
- ☐ Sept. 14, 1963 Celebration of S.A.M.'s Golden Anniversary
- ☐ Sept. 15-25, 1963 CIOs, 13th International Management Congress, New York City

#### NEW ASSIGNMENT FOR WISE

Recently the Mine Safety Appliances Company announced that it had consolidated its Research Engineering and Product Development Division into a single group reporting to the parent company. It assigned David N. Wise, current S.A.M. vice president — program operation, to handle all activities other than strict research, engineering, and product development. Previously, Mr. Wise served as manager, applied research and engineering, Safety Products Division.

## "Buy American" vs. Buy the Best?

If by "BUY AMERICAN" we mean that the consumer must make allowances for slightly inferior craftsmanship or notably higher prices, then this slogan should be abandoned as an "abject admission of incompetence and a banner of disgrace for the American free-enterprise system."

These challenging words rang out at the 19th Pacific Inter-Mountain Conference of the National Association of Purchasing Agents, held in Phoenix, Ariz., September 29-30. The speaker was J. K. "Dusty" Fowlkes, co-founder and President of Value Analysis, Inc.

"There is not one good reason that anyone can give to prove that American manufactured goods cannot compete on an equitable basis with those produced abroad . . . 'BUY AMERICAN' implies an inability to compete. There is simply no basis for that assumption."

"Management people must take cognizance of the fact that one dollar's worth of waste in product design, production or distribution requires an additional ten dollars' worth of sales to balance the ledger. Ten years—even five years—ago, this kind of exorbitant waste was permitted by the consumer. Well, that consumer is now 10 years wiser. He is mature. He isn't buying that much waste anymore, no matter what flag is flying over it."

"A positive, systematic approach that investigates the whole business cycle—from design to consumption—is required. We have the raw materials, the processing, the 'American ingenuity and know-how' to match any that the rest of the world can offer," said Mr. Fowlkes.

## A European Manager Examines U.S. Management Training

The fact that the yearly increase in U.S. productivity is less than that desirable for ultimate long term growth, despite high or near-record investments in new machines, plants and facilities, is due in part to failure of management to adopt effective methods of employee training. Jan Verschoor, a Dutch management consultant, stated recently,

Mr. Verschoor said that U.S. industry is either too casual about employee training, or confuses it with general educational efforts that have no immediate effect on worker efficiency and productivity. This general education approach provides a long-term base, but far too little is being done to fill the specific needs for skills right now.

Generally, management delegates the responsibility for training to supervisory personnel who, at best, are inadequately prepared for training functions and whose approach varies from department to department and even from employee to employee. As a result, there is no uniformity to the training of new personnel. Further, little effort is devoted to re-training of experienced employees whose productivity within a given group may vary greatly. According to some experts, in-plant productivity could be increased by an average of 20 percent without



additional investment in equipment or facilities with adequate methods to be employed for re-training of existing employees.

## African American Trade and Development Assn.

Formation of an African American Trade and Development Association was announced today by its Chairman, Eric Johnston, President of the Motion Picture Association of America.

The new Association, recommended by African officials and American business executives who attended the Conference on African Resources at New York University in March 1961, will work toward better relations between American investors and business corporations, and the countries of tropical Africa. Membership is open to both American and African businessmen.

In making the announcement, Mr. Johnston said: "Tropical Africa offers an immense opportunity for American capital, industry and labor to demonstrate the values of our free enterprise system, and to develop profitable relationships that will have lasting values for these newly emerging countries."

Four major purposes of the Association are:

1. To serve as a research and fact finding agency, providing member business firms and corporations with current information on trade and investment opportunities in tropical Africa.
2. To provide a point of contact for Africans with the American business community. The Association will enable Africans to relate more effectively to the American community, and member firms or corporations wishing to explore business opportunities in African countries.
3. To work with universities and other organizations in conducting seminars, round table discussions and other types of meetings on topics that concern industry and development in African countries. Such meetings may be organized in response to requests from member firms and corporations to

acquire additional information or clarification on problems.

4. To advise the legislative and executive branches of the United States Government on the thinking of member business firms and corporations on national problems and issues affecting business relations with Africa.

The Association will also advise African governments on laws and regulations that will make their countries more attractive for trade and investments.

The Board of Directors has received preliminary financing for six months for establishing the organization, setting up the office, and determining the values of the Association to business corporations and the African governments.

## Note:

A new edition of the film catalogue, "SEE . . . HEAR . . . MR. BUSINESSMAN," Third Edition-1962, is now available for distribution.

The catalogue contains film and filmstrip listings, with annotations, of business-industry oriented materials. All film materials listed are available to schools, colleges, business, industry and civic groups at nominal rental charges. Since the Audio-Visual Center of the City College (Bernard M. Baruch School of Business & Public Administration, 17 Lexington Ave., New York 10, N. Y.), is operated on a non-profit basis, there will be a modest charge of 20¢ (no stamps, please) to meet printing and mailing costs.

## Standards Reduces Costs

Increased reliance upon standards and standardization programs to offset the cost-profit squeeze is reported by 67 companies responding to an American Standards Association questionnaire. Without exception, all firms stated that their standards activities had contributed substantially to reducing costs.

Specific savings information was made available by 15 of the companies. Percentage-wise, the savings range from 1 to 20 percent of gross income. On a dollar savings ratio, other companies reported a range of \$3 to \$5 gained for each \$1 put into standards work.

Over two-thirds of the companies indicated that standardization is being extended to more areas of company operations. That this is being accomplished through company standards committees utilizing a standards engineering staff for administrative servicing is indicated by responses to three related questions. Two-thirds of the companies reported no recent increase in either standards personnel or department budget. However, over half indicated that company standards committees are being widely used.

Slightly more than half reported that company standards are mandatory once introduced into the standards manuals and made available for general internal use. A total of 62 companies said that American standards approved by the American Standards Association are used in the company standards programs.

All but one company answered in the affirmative that company standardization had the full support of top management.

# Remington Rand Performance Awards



**AUBURN UNIVERSITY**—Prof. Harold Fischer congratulates Prof. Charles N. Cobb, Prof. Coppedge, Clarence Ogle, Pres., Julian Smith, Past Pres., John Powell, James Tolbert, Clarence Earnest, Andrew Noland, and Donald DeFreese.

**NEW YORK UNIVERSITY—EVENING DIVISION**—Henry J. Smith, President, is congratulated by Prof. Harold Fischer.



**NEW YORK UNIVERSITY—DAY DIVISION**—Larry S. Klein receives the chapter awards from Prof. Harold Fischer.

**LASALLE COLLEGE—EVENING DIVISION**—Prof. Harold Fischer presenting award to Larry Quinn, Past Pres., Jack Fleck, Pres., Abe Kern, Linwood Fauntleroy, Joe Paplini, and Vince DiPaolo.



**OHIO UNIVERSITY**—Dr. E. T. Hellebrandt, Regional Vice President; Professors Ralph Smith, Don Bolan, Bill Lapham, faculty advisors; George Williams, Pres., Richard Harris and Gary Looker, represented their chapter.

**UNIVERSITY OF NORTH DAKOTA**—Prof. Walter L. Bishop, faculty advisor, J. B. Spalding, Robert Helland, T. F. Devine, and H. Olson.



**ROOSEVELT UNIVERSITY**—Dr. E. C. Flora, Donald Anderson, Arthur Jones, Richard Brockman, Ben Smolensky, James McEleny, Rochelle Mitz, Denyce Moore, Peter Young, Pres., receive their awards from Prof. Harold Fischer.

**UNIVERSITY OF MISSISSIPPI**—Prof. Harold Fischer presents the chapter award to Dr. William E. Green, faculty advisor, Watler E. Shettlemore, and Massimo D. Amassa.



**ADVANCED MANAGEMENT**



# S.A.M. Performance Awards

## University Division News by President Harold Fischer

The University Division meeting of the Fall Management Conference conducted October 6 in Chicago was a big success. More than 100 representatives of chapters from coast to coast and Puerto Rico assembled to exchange ideas with respect to the operations and opportunities of University Chapters.

James E. Newsome, Production Manager, Johnson & Johnson, and Chairman of the Board, S.A.M., opened the meeting with a talk on "Professionalization of Management." Fred E. Harrell, Chairman of the Board, Skidmore Gear Co., and Executive Vice President, S.A.M., discussed "Co-ordination—Key to Effective Operation." The panel discussion that followed was chaired by Dr. E. T. Hellebrandt, Ohio University, and Regional Vice President, S.A.M. The panelists were: Professor Charles N. Cobb, Auburn University; Dr. Raymond Mayer, Loyola University of Chicago; Dr. Elbert C. Flora, Roosevelt University; Carl F. Hazelbauer, Vice President, Student Chapter Activities, Chicago Senior Chapter; and Joseph L. Kennedy, University Division Regional Director, and Vice President of Membership, Clearing Senior Chapter.

The leading Chapters in the University Division were honored at the Conference on October 7. Recognition of Chapter activities was bestowed on these chapters through the Performance Award Plans:

The *S.A.M. Performance Awards Plan* was developed to encourage policies, activities, and procedures that strengthen the chapter, increase its value and service to its members, and embody good management, organization, planning, and control. During the past year competition was very keen among the University Chapters participating, and reports revealed an increasing vitality and quality of achievement.

The *Remington Rand Performance Awards*, consisting of citation, banner, and a cash award, made available by the Remington Rand Division, Sperry Rand Corporation, were presented by Robert B. Curry, Vice President, Remington Rand, and National President, S.A.M., and Professor Harold Fischer, President, University Division, S.A.M.



**1st Place Winner**—Wm. R. Divine (right), Regional Vice President, Central Atlantic Region #7, and Governor of the Washington Chapter, S.A.M., is shown receiving the 1st Place award for the Chapter Performance of the Washington Chapter from Hezz Stringfield, Vice President and Secretary of S.A.M. at Chicago. In addition, the Washington Chapter received the President's award.



**2nd Place Winner**—Gerald G. Hinrichs (right), President of the Madison Chapter, is shown receiving the Chapter Performance award for 2nd Place for the Madison Chapter from Hezz Stringfield, Vice President and Secretary of S.A.M. at Chicago.



**3rd Place Winner**—Henry A. Fowler (right), President of the Binghamton Chapter, is shown receiving the Chapter Performance award for 3rd Place for his Chapter from Hezz Stringfield, Vice President and Secretary of S.A.M. at Chicago.



**7th Place Winner**—Dominic Paolillo (right), President of the New Haven Chapter, is shown receiving the Chapter Performance award for 7th Place from Hezz Stringfield, Vice President and Secretary of S.A.M. at Chicago.



Participants in the presentation of the awards: left to right: Robert B. Curry, Vice President, Remington Rand, and National President S.A.M.; James E. Newsome, Johnson & Johnson, and Chairman of the Board S.A.M.; John Hooper, District Manager, Hamilton Watch Company; Hezz Stringfield, Finance Director, Carbide & Chemical Co., and Vice President S.A.M.

# Management Bookshelf

Review of

**PRODUCTION FORECASTING, PLANNING AND CONTROL** by E. H. MacNiece. John Wiley & Sons, Inc., New York, N. Y., 1961. 402 pp., \$9.75.

Designed as a text primarily for an undergraduate course, the book is structured around manufacturing planning and production control. The planning and control of other functions in the industrial organization are treated less intensively to complete the total process. The style is easy with summaries at chapter ends followed by provocative case discussion problems and questions.

The book is mostly an "introductory principles" volume with frequent illustrations of how-to-do-it techniques. Occasional reference is made to the need and existence of more advanced production management principles such as schedule optimization, feed-back, information flow, etc., but no further treatment is given to these areas.

The chapter on "Manufacturing Planning" deserves special mention for its excellent and detailed analysis of the methodology of planning manufacturing processes. As a function deserving more attention, particularly in intricate process industries, review of this chapter on planning manufacturing processes would serve even proficient manufacturing organizations. Later a sequel chapter on "Plant Loading" presents effectively manual methods of allocating available equipment throughout the manufacturing cycle. Much literature is available under the title of queuing theory but fails in its usefulness to operating managers due to mathematical programming knowledge required to implement such techniques. This author has surmounted that barrier.

Throughout, there is a pre-eminence of attention to manufacturing to stock (as compared to job order production). Historically, this has been our mode in industry which may account for its emphasis in texts and in teaching industrial management subjects. We have been witnessing, however, a trend toward individualism in product development, manufacturing, and marketing that is forcing a transition from mass to job oriented production. This volume gives limited attention to recent developments in management planning and control which facilitates this transition. Some mention and analysis of linear programming, probability, certain games, etc., following the principles portion of the text would have prepared the reader for further inquiry into the need and practice of these methods.

Throughout, the reader is left with an impression of the author's keen and sincere awareness of the human and socio-economic implications of effective management planning and control. This most desirable slant in a management text gives a sense of human purpose to the seemingly impersonal and occasionally disruptive industrial business world. This is well illustrated in the chapter

on "Level Production and Stable Employment," which effectively treats the feasibility of having such as a management objective—equal with product quality, profits, share of market, etc. In a word, stabilized employment achieved through more effective advanced planning and scheduling of production could be the key to the guaranteed annual wages problem.

DAVID G. BOULANGER,  
Specialist—Eng. Budgets & Measurements,  
Engineering Support & Administration,  
General Electric Co., Burlington, Vermont

Review of

**CASE METHOD IN HUMAN RELATIONS: THE INCIDENT PROCESS**, by Paul and Faith Pigors. McGraw-Hill Book Co., Inc., New York, N. Y., 1961. 413 pp., \$8.75.

This book plumps for case method as the way to help people learn how to work more productively with others. Hitherto the method has had a serious limitation: inability "to reproduce the unfolding quality of actual events." The authors claim to have cured the defect with "The Incident Process," whereby (1) members of a case study group take turns as leaders and observer-reporters, (2) discussion is launched by stating the climax of the case, (3) relevant facts must be extracted by members' questions, and (4) the group not only examines long-range issues but also defines immediate issues and tests short-term decisions.

As a broader thesis the book holds that case method, despite its academic origins, can and should work in practical situations. Two ways of importing it into organizations are proposed. First, through supervisors' case-study courses, which would move rapidly toward discussing cases that actually involve the members. Second, by introducing the Scanlon Plan and having observer-participants monitor the Plan's management-employee committee meetings. "Human relations" problems arising in these meetings would provide case material for periodic discussion by each committee.

The Pigors have written their text with conviction and style. Students and practitioners in the "human relations" field will find it lucid, persuasive, conversational (almost too conversational at times). The case illustrations, however, seem curiously at odds with the text. While the text leads the reader to believe that the study of "human relations" is concerned with getting a job done effectively, the subject matter and (to a lesser degree) the treatment of the cases tend to pull him back toward the tired old notions of "personnel."

The Pigors leave the \$64 question unasked. Does the "human relations" approach pay for itself by increasing organizational effectiveness? Is there more than a *a priori* proof that an organization will make durable and significant operating gains just because its members have developed greater sensitivity

in "human relations"? Doesn't the evidence actually point in another direction? Cases going as far back as H. J. Fitzjohn Porter's brilliant experiments at the turn of the century indicate that organizational effectiveness and "human relations" go forward together under definite conditions; namely, where managers employ their colleagues' and subordinates' higher abilities *because they are compelled to do so in order to reach ambitious operating goals*. This, if anything, is what the Scanlon Plan committees (which closely resemble Porter's "standing committees") teach.

ROBERT ZAGER,  
Pritchard, Schaffer & Woodyatt, Stamford, Conn.

Review of

**THE IMPACT OF THE PROFESSIONAL ENGINEERING UNION** by Richard E. Walton. Harvard University Press, Cambridge, Mass., 1961. \$5.00.

Based upon research covering 11 of the 13 industrial companies whose professional employees have certified bargaining units, Professor Walton's book analyzes the impact of these professional engineering unions. After all the evidence has been examined, perhaps the most significant conclusion is one reached by most of the engineers themselves who are in unionized companies — "unionism is an uncomfortable solution at best." The chief source of this discomfort is the "lack of compatibility between the engineers' concept of unionism and their concept of professionalism." There is the need for much greater understanding of the unique phenomenon of the engineering union, particularly its differences from the production union. For all companies, whether its engineers are organized or not, the fact that professional people have organized poses the need for "innovative thinking" about engineer-management relations.

A study of Professor Walton's book is a most stimulating experience, particularly in its challenge to management to find improved employee or organizational forms that will let the engineer be heard. But Professor Walton could also have challenged the engineer to find the solution to meeting his needs by himself. While there may be better ways for the engineer's social and egoistic needs to be met at the workplace by "innovative thinking" on the part of management, the engineer himself needs to be examining his own concept of professionalism and how he plans, as an individual, to meet all of its challenges. When he does this he may discover, for example, that his desire to influence the environment can be extended beyond the plant walls and out into the social environment where the world is crying for his talents.

The research exposes the impact of the professional engineering union in an illuminating way. We should look forward to further studies by Professor Walton that will lead us in the direction of better answers to the dilemma — by both managers and engineers.

H. W. TULLOCH,  
Manager-Relations, Specialty Control Department, General Electric Company, Waynesboro, Virginia.

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